

ITEMS OF INTEREST.

VOL. XVIII.

OCTOBER, 1896.

No. 10

OUR CASE IN COURT.

The following is an abstract from briefs filed by our attorneys.
THE PUBLISHERS.

IN THE CIRCUIT COURT OF THE UNITED STATES

FOR THE EASTERN DISTRICT OF PENNSYLVANIA.

The Consolidated Dental Manufacturing Company, a corporation organized and existing under the laws of the State of New York and a citizen thereof, Complainant.

vs.

Alfred S. Robinson and George F. Lasher, citizens of the State of Pennsylvania and resident within the Eastern District thereof, Defendants.

No. 1.

October Session, 1896.

IN EQUITY.

TO THE HONORABLE THE JUDGES OF THE SAID COURT:

The Consolidated Dental Manufacturing Company, a corporation organized and existing under the laws of the State of New York and a citizen thereof, brings this its bill against Alfred S. Robinson and George F. Lasher, citizens of the State of Pennsylvania and resident within the Eastern District thereof.

And thereupon your orator complains and says:

First.—The plaintiff is, and has been since the twenty-second day of July, 1896, the owner of a certain periodical and monthly publication known as *ITEMS OF INTEREST*, theretofore published by The Wilmington Dental Manufacturing Company and its Receiver, The Girard Life Insurance, Annuity and Trust Company, of Philadelphia. On the said twenty-second day of July, 1896,

pursuant to an order of the Circuit Court of the United States for the District of Delaware, the said The Girard Life Insurance, Annuity and Trust Company, of Philadelphia, sold the said publication, including its good-will, wood cuts, electrotypes, subscription list and all its rights and property to Charles Austin Bates and H. Randolph Whitman, under the firm name of The Bates-Whitman Company, and received full consideration therefor. On the twenty-third day of July, 1896, the said The Bates-Whitman Company sold, transferred and delivered the said publication, with the good-will thereof and the wood cuts, electrotypes, subscription list and rights and property thereof to the plaintiff, who paid a large consideration therefor, and thereupon the said plaintiff, your orator, became and now is the exclusive owner of the said rights and property.

Second.—The defendant Alfred S. Robinson had been for a long time prior to the sale of said publication and the purchase thereof by the plaintiff as aforesaid, the advertising manager, and in general charge of the publication office of said periodical. He had no relation, by way of ownership of any kind whatsoever, in the said publication, or in any of its assets, nor has he had at any time since any ownership in said assets or title thereto; said assets of every kind whatsoever belonging at that time exclusively, as heretofore averred, to The Wilmington Dental Manufacturing Company and its Receiver, The Girard Life Insurance, Annuity and Trust Company, of Philadelphia, and subsequently to your orator. The defendant, George F. Lasher, was and had been for a considerable period prior to the said twenty-second day of July, 1896, the printer of the said publication *ITEMS OF INTEREST* for its publisher, the said Wilmington Dental Manufacturing Company, and has in his possession the various plates, forms and material commonly and usually used by the publisher for the formation, preparation and publication of the said *ITEMS OF INTEREST*.

Third.—The said *ITEMS OF INTEREST* was established in the year 1879, and had been published regularly and continuously from that time up to and including the month of July, 1896, and for the six years immediately preceding the said month of July, 1896, had been published in a certain well-known form, having a definite character and appearance, which form consisted of a certain cover in yellow with the name *ITEMS OF INTEREST* across the face thereof in a scroll, and containing upon the face a Maltese cross, having inserted therein the words, "A monthly magazine

of dental art, science and literature. T. B. Welch, M.D., Editor, Vineland, New Jersey," and also having upon the face of said cover the words, "Published by The Wilmington Dental Manufacturing Company." The number of said magazine for the month of July, 1896, is filed herewith and made part of this bill, marked "Exhibit A." The appearance and the general character of the said magazine had, as aforesaid, continued to be the same for a number of years. It had been, and was at the time of said sale, a very successful publication. It had built up a very valuable and steadily-increasing circulation, and was a valuable property as an advertising medium, and had become well recognized as an established and well-known method of reaching the dental profession. Its value lay, among other things, in the high reputation of the publication, its reliability, and wide circulation among dentists and dealers in dental appliances. This value was greatly enhanced by its freedom from counterfeit and by the difficulty of legitimate imitation, because of the said well-known appearance of the magazine, as indicated by its form, type, cover and character of the publication, whereby it was and is readily identified as genuine and relied upon by the public as such. It had a large and increasing list of subscribers among well-known and prominent members of the dental profession and dealers in dental appliances, and offered thereby a special inducement to all persons desiring to reach such subscribers by advertisement or articles of interest to the profession.

Fourth.—In or about the month of July, 1896, and prior to the said twenty-second day thereof, the said defendant, ascertaining that the said publication was about to be sold, as the plaintiff is informed and verily believes and expects to be able to prove, and well knowing the value of said publication and the extent and high character of its subscription list and circulation from his previous connection with it, determined upon instituting and establishing a magazine of a scope similar to ITEMS OF INTEREST; and considering to obtain the advantages to be derived from his previous connection with the said ITEMS OF INTEREST determined wrongfully and fraudulently to issue his said contemplated magazine in such form and in such words as to lead the public, and especially the subscribers to ITEMS OF INTEREST, to believe that the said new publication was in truth a continuation of the said ITEMS OF INTEREST, and verily the same magazine under a different name. To the end that he might more effectually deceive the public, the defendant, without regard to the rights of the plaintiff,

and fraudulently invading the same, and intending to injure the plaintiff, actually procured the publication of the first number of a new magazine, entitled *Welch's Monthly*, taking care that it should be of a size, type, and cover so similar to ITEMS OF INTEREST as to appear identical therewith, and with devices on said cover precisely, or almost precisely, similar to those employed by ITEMS OF INTEREST; and with the yet further intention to deceive the public and fraudulently injure the plaintiff in its rights, the said defendant A. S. Robinson procured the services of one T. B. Welch as editor of the said publication, to leave the employ of the said ITEMS OF INTEREST and to assume the editorship of the said new magazine, the name of the said T. B. Welch appearing upon the initial number of the said new magazine precisely as in ITEMS OF INTEREST. The defendant, seeking the most ready channel to introduce his new periodical under the guise of ITEMS OF INTEREST, and as identical with it, fraudulently possessed himself, as your orator is informed and believes, of the subscription list theretofore belonging to The Wilmington Dental Manufacturing Company and its Receiver, and now the exclusive property of the plaintiff as aforesaid, and thereupon proceeded to solicit subscriptions to his proposed new publication by writing to various subscribers to ITEMS OF INTEREST, the names of such subscribers having been fraudulently obtained from the subscription list belonging as aforesaid to the plaintiff. The said defendant A. S. Robinson, so as to further enable him to perpetuate the said fraud upon the plaintiff, employed the defendant George F. Lasher, who, as above described, was and had been the printer of ITEMS OF INTEREST, to print the said magazine, *Welch's Monthly*, and, as plaintiff is advised and avers, through and by means of the knowledge and experience and of the plates and forms in the possession of the said George F. Lasher, was enabled the more effectually to prepare and issue a magazine in the form, appearance and character of ITEMS OF INTEREST. The color, character, and appearance of the said *Welch's Monthly* is almost identical with that of ITEMS OF INTEREST. The only difference in the appearance of the two magazines is the name adopted for the new publication. The copy of the August number of the said magazine, *Welch's Monthly*, is filed herewith, marked "Exhibit B" and made a part of this bill. In the said number of *Welch's Monthly* for August, 1896, a preface is inserted in which it is asserted in effect, with intent to deceive and defraud, that the said *Welch's Monthly* is a continuation of the publication ITEMS OF INTEREST under the

new name, *Welch's Monthly*. The plaintiff is advised and avers that the intent of said preface and the statements therein contained, made on behalf of the said defendant, A. S. Robinson, was and is to deceive the public and the former subscribers, purchasers, and readers of ITEMS OF INTEREST, so as to lead them to believe that *Welch's Monthly* was and is ITEMS OF INTEREST, and to thus obtain wrongfully and in fraud of complainant's rights the benefit and advantage of the complainant's property greatly to its injury and damage.

Fifth.—Your orator shows to the court that the said defendant has thus far issued one number of his said new publication, known as *Welch's Monthly*, to wit, that of August, 1896, and that it is the intention of the said defendant to issue forthwith another such number for the month of September, and thereafter to continue issuing every month a number of the said *Welch's Monthly*.

Sixth.—Your orator represents to the court that the publication of the said contemplated September number, and thereafter the continued publication of the said *Welch's Monthly* in its present form, will be of immediate and great damage to the plaintiff, because:

(a.) The defendants have by fraudulent means so distinguished and characterized their magazine as to deceive the public into believing that it is identical with ITEMS OF INTEREST.

(b.) Because the defendants have explicitly represented in words, in the initial number of their magazine, and have deceived the public into so believing, that the new magazine is identical with the old, and that the only change made therein has been a widening and enlarging of its scope.

(c.) Because they have availed themselves fraudulently of the subscription list belonging exclusively to ITEMS OF INTEREST to introduce the new publication to persons heretofore and at the present time subscribers to ITEMS OF INTEREST, and in this manner have reduced the number of subscribers thereto and lessened the revenue therefrom derived.

(d.) And furthermore, because of the reasons aforesaid, to curtail and injure the advertising list by making the magazine a less extensive and less desirable method of reaching the dental profession, and thus seriously affecting its value as an advertising medium, and consequently reducing the revenue of the paper.

Seventh.—The plaintiff is advised and believes that the acts and doings of the defendants as above set forth have been and are in fraud of its just rights in the premises, in violation of its

property in ITEMS OF INTEREST, of great pecuniary damage to it, and that a further publication of the said new magazine, called *Welch's Monthly*, will be an immediate and permanent injury to the plaintiff; and being without full and adequate remedy at law is in need of equitable relief.

Your orator therefore prays as follows:

First.—That an injunction, preliminary until hearing and perpetual thereafter, issue against the defendant Alfred S. Robinson and against the defendant George F. Lasher, restraining them, their respective servants and agents, from publishing, printing or circulating the September number of the periodical known as *Welch's Monthly* in its present form, or in any form so similar to ITEMS OF INTEREST as to deceive the public.

Second.—That an injunction, preliminary until hearing and perpetual thereafter, issue against the said defendants, restraining them and each of them, their servants and agents, from further publishing, printing, producing and circulating at any time whatsoever the said publication known as *Welch's Monthly* in its present form, or in any form so similar to ITEMS OF INTEREST as to deceive the public and injure the rights and property of the plaintiff.

Third.—That an injunction, preliminary until hearing and perpetual thereafter, issue against the defendants, restraining them and each of them, their servants and agents, from using for the purpose of soliciting subscriptions to their own publication, known as *Welch's Monthly*, or for any other purpose of monetary advantage to themselves, the subscription list belonging to the said ITEMS OF INTEREST, the information contained in the said subscription list, and from using the information contained in any and all copies of said subscription list made or procured in any way by the defendants.

Fourth.—That the defendants be required to discover and set forth fully the facts as to what copies were made by them or procured by them of the subscription list containing the names and addresses of the subscribers to ITEMS OF INTEREST, and what use had been made of them, or by others at their instigation, of the information therein contained.

JOHN HAMPTON BARNES,
A. H. WINTERSTEEN,
GEO. TUCKER BISPHAM,

Attorneys for Plaintiff.

AFFIDAVIT.

Ruth A. Potts, being duly sworn, deposes and says that she now resides at No. 304 West Forty-fifth street, in the city of New York. That until the twenty-fifth day of July, 1896, and for six years prior thereto, she was in the employ of The Wilmington Dental Manufacturing Company and its Receivers at the office of their publication, to wit, *ITEMS OF INTEREST*, at No. 1413 Filbert street, Philadelphia, and had charge of the subscription list of said publication.

That Mr. Alfred S. Robinson was the advertising manager of said publication and had general charge of said office, and was her superior.

That about three or four weeks ago Mr. Robinson, who had learned that the said *ITEMS OF INTEREST* was about to be sold, took all the subscription cards out of the library bureau filing case in said office, and about six thousand blank subscription cards from a wall case, and put them into boxes and took them away. This was done in the deponent's presence.

That on the morning of the following day a boy called at said office and informed deponent that he came from the O. K. Addressing Company, of Philadelphia, and requested her to tell Mr. Robinson that those cards (being the cards which he, Mr. Robinson, was having copied for himself by the said O. K. Addressing Company from the filled up cards which he took from the said bureau in said office) would be through by eleven o'clock in the morning of that same day. Deponent further saith that the said Mr. Robinson brought the original cards back on that day or the day after, but failed to return the aforesaid blank subscription cards.

RUTH A. POTTS.

Sworn to before me, the fifth day of August, 1896.

(Signed) D. M. LAWRENCE,
Notary Public, Richmond County.

Certificate filed in New York county.

[SEAL]

ORIGINAL COMMUNICATIONS.

NEW JERSEY STATE DENTAL SOCIETY.

The President, Dr. Iredell, then introduced Dr. S. Freeman, of New York City, who read the following paper:

PAINLESS DENTISTRY.

The difference in the degree of fear in which individuals approach the dreaded dental chair, has been a theme of discussion at all times, and it is doubtless our paramount duty in every case to alleviate the sufferings of our patients as much as possible, and by all the means which we can devise. We handle very sensitive and delicate structures, the teeth, which bear intimate, anatomical and physiological relations with some of the most important organs of the body, both by the continuity of structure, and by nervous and vascular communication. Anatomically considered, no other portion of the human organism offers such complex association of tissues as those which compose the mouth, nor such diversified physiological functions, nor from a pathological standpoint, such systemic relations.

Bearing this in mind, we must seek the best method for relieving suffering humanity of the fear of dental operations. This would be accomplished by painless dentistry. In comparing dentistry on its present immense scale with its infant or less developed state, we find it advisable at least to have our offices fully equipped with all the necessary appliances.

With all these advantages, let us pause a moment to see whether we have made any progress over the very earliest methods employed by our eminent predecessors. Let us observe, compare and reflect. The following is the report of one case made by Dr. J. D. White.

"A gentleman, aged about twenty-three, called to consult us about his teeth in February, 1839. His teeth were all in a badly decayed condition; the canine teeth, upper and lower, were decayed on the labial surfaces, as well as the superior front incisors; the proximal surfaces of nearly all of his teeth were decayed, and all were so very tender that he could not brush them, nor even wipe them with a cloth at times. We placed a very small quantity of dry arsenious acid in the cavities, around their edges,

and placed over it a little soft yellow bees'-wax, as the white was too hard to work, giving pain when pressed into the cavities; this dressing was left for twenty-four hours; at the expiration of this time we cut out the decay without difficulty, and plugged the teeth, restoring the mouth to comfort, and rendering the teeth useful. These teeth, in which the arsenic was applied twenty-one years ago are not dead, and we think sufficient time has elapsed to prove that when a tooth dies, after its application, it has been injudiciously applied, or is owing to a peculiarly imcompressible condition of the parts to the action of that substance. If this be true, milder remedies should first be resorted to, or it should be employed only as a final alternative. It is positively true that some teeth yield more readily than others to treatment with arsenic. What this is owing to we do not pretend to decide at present. We have applied arsenic alone, as well as the paste, from six to twelve times to teeth, before they have become sufficiently insensible to operate on; after all this, years have elapsed, and the teeth are not yet dead, while others have become dead in a few months after but one slight application." Dr. J. D. White reports many other cases.

Dr. Register, of Philadelphia, made the following statement at a meeting of the New York Odontological Society, February 18th, 1896:

"Sensitive dentine is the greatest bugbear of the profession. I think nothing causes more severe pain and loss of nervous energy than to work upon sensitive teeth, and anything to relieve that is a blessing, alike to the laity and to our profession. I find, by the use of warm air and the application of a coagulant that we get improved results. Carbolic acid, I believe, is our best coagulant, because it leaves no stain. I am using, after a coagulant, a one per cent. solution of arsenic. I know, when I speak of applying arsenic for the destruction of sensitive tissue, that I am treading upon very delicate ground; but for several years I have been using 'Fowler's Solution,' in very sensitive cases, at first very rarely, in extreme cases. But finally I grew bolder. My method is to first dry the dentine and apply carbolic acid, then apply Fowler's Solution or a solution of one per cent. arsenious acid; this is about what Fowler's Solution contains, four grains to the ounce. I allow that to remain in contact with the dentine for from one to five minutes, very rarely more than two minutes."

In reply to several questions in reference to the use of arsenic, Dr. Register said:

"I have used it during four or five years and do not apply it to an exposed pulp, but when it is nearly exposed. I should have impressed upon you that the use of it should be followed by an antidote; ammonia and magnesia are excellent antidotes for arsenical poison, although not so good as salts of iron; but the iron will stain the teeth, and therefore I think the magnesia and ammonia better. After using ammonia and magnesia no arsenious acid remains in the dentine. By this method the pain is considerably lessened in one application. I do not find that it destroys the life of the dentine, as, upon the removal of temporary fillings, the sensitiveness is reëstablished. Repeat the application if necessary, but be sure to follow up with the antidote. I am quite sure it will prove a great blessing both to patient and operator, resulting in no devitalized pulps."

Here we have two reports made by men, one who was, and the other who is, a shining light in the dental profession.

One reports in February, 1839, the other February, 1896; fifty-seven years elapsed, and yet the methods of treatment are similar in certain respects. We find, however, that Dr. Register has given us a scientific method for the application of arsenious acid to sensitive dentine.

Summed up, the method is as follows:

Dehydration; application of a coagulant such as carbolic acid; then arsenious acid, a one per cent. solution, or in the form of Fowler's Solution, allowed to remain a few minutes; then the antidote of ammonia and magnesia.

I have to report that I have followed his method of treatment and have had satisfactory results.

On examining the history of dentistry, our attention is attracted to the various devices and nostrums which have been employed for relieving sensitive dentine, or alleviating the sufferings of patients, and we find the *modus operandi* similar to that in vogue to-day.

For example, the use of electricity, then termed voltaic narcotism, and at present known as cataphoresis.

The following is a summary of a report made by a committee on voltaic narcotism on February 5th, 1859:

First. That the application of a narcotic solution to a tooth in connection with a continuous current of electricity of considerable intensity leads unquestionably to the production of local anæsthesia, so that in some instances the pain of extraction is entirely avoided by it.

Second. The anæsthesia thus produced is true anæsthesia, extending from the tooth to surrounding parts.

Third. The process is limited in its application. As at present understood, it can be used successfully only in cases where the cavity of the tooth is exposed.

Fourth. The time required for the application in each case is a serious obstacle to its practical usefulness.

Fifth. The pain produced in the first stages, especially when the tooth is hypersensitive, is always a source of complaint. The pain dies away, certainly, as the process goes on, but to be successful, there should be no pain at all during any stage.

Sixth. The above objections are too decided in character to enable the committee to recommend this method as a general practice. The members are, nevertheless, of the opinion that important improvements might be made in the process, and with the hope that the history thus put forward may serve as the basis for such improvements, they lay the results of their united labors before the profession.

In November, 1859, Dr. Oliver, of Buffalo, after making various improvements on the apparatus then employed, states:

"I assert most emphatically that, if properly applied, electricity is a perfect local anaesthetic in almost every case and more uniform in its action than any other agent heretofore used, either locally or otherwise. The length of the operation is of no consequence, for if directions are followed, no pain will be inflicted. In all cases of extraction or excavation of sensitive cavities, it is best to use the extensor and thread bandage, but in other cases, such as removing fangs, extirpation of living nerves, etc., the conductor may be used. In this way the current may be applied with great benefit in all cases where pain is usually inflicted. Great care and delicacy is necessary in introducing the current. Upon that depends success. This mode of using the current has been eminently successful in my hands, and, of course, will be with others if properly applied."

The members of the profession who are trying to establish the claim of priority in the employment of galvanic electricity for the extirpation of pulps, the treatment of sensitive dentine and the extraction of teeth will no doubt be surprised to learn of these reports of 1859. At the present time we must admit that the science of electricity has advanced to such an extent that we are enabled to gain better results in less time, and also that that

great local anæsthetic, cocaine, has been added to our armamentarium.

It is scarcely necessary for me to review the numerous experiments demonstrating the use of cocaine, its topical application and its injection; we have learned that its use in this manner is often followed by serious results, but when applied with galvanic electricity and thus forced into the tissue, the medicament loses that most dangerous feature, its action upon the heart.

The question now arises, do we obtain the desired effects from the cataphoric action of cocaine, and what combination of cocaine should be utilized, as many have been suggested?

A combination of cocaine with sulphuric acid has been employed, but its action upon the dentine proved the inadvisability of using any acid combination, as it softens the tooth substance and permits the filling to cave in. Guaiacol and cocaine, which was introduced by Professor Morton, has several objections, one of which is its disagreeable odor, and the other its resistance to the electrical current. All medicines, such as creosote, carbolic acid, aconite and chloroform united with cocaine, retard the passage of the medicament into the tissues.

A twenty per cent. solution of cocaine, made slightly saline, is the one which gives the most satisfactory results, as electricity is readily conducted and the medicament flows quickly into the tissues.

The method which I employ to allay the sensitiveness of the dentine is as follows:

Dry the tooth thoroughly by the use of a hot air syringe, attached to a compressed air apparatus, then apply a saline solution of cocaine, which is absorbed in the tubuli of the tooth. Upon the application of the electrical current you obtain an anæsthetic condition more quickly than if applied previous to dehydration of the dentine and the absorption of the medicine. Now we have, as is supposed, a local anæsthetic condition; although the touch of an excavator causes no pain, yet the rapid cutting of the bur, which produces heat, is very excruciating, for a tooth placed in a cataphoric condition is very sensitive to thermal changes.

Hypnotism or animal magnetism is another method employed by some with varying success, to allay the fears of the patient and overcome the pain produced by surgical and dental operations. I will not detain you with an account of its history, or the *modus operandi* of placing the patient in condition to be operated upon.

Although I might enumerate many other theories and practices advanced to gain this great end, "Painless Dentistry," the only methods which are creating much controversy at present are Dr. Register's application of arsenious acid, and the cataphoric action of cocaine.

Painless dentistry can only be obtained by having a thorough knowledge of the medicaments employed, and a well-equipped office under the guidance of a scientific dentist, whose great aim is to benefit humanity while making an honest living, and not from the charlatan who is always looking for the almighty dollar and indifferent to the serious effects which his treatment might have upon the patient.

DISCUSSION.

DR. GILLETTE, Newport, R. I.

I have listened with a great deal of interest to Dr. Freeman's paper. Parts of it are entirely new to me, and I have listened, I confess, with some surprise to the revival of the old idea of using arsenic in sensitive dentine. I do not think I wish to say much about that, beyond expressing my surprise, and saying that I shall wait some time before adopting any such course as that suggested, in view of the well-known deleterious effect that has been reported in such a large number of cases from the use of arsenic. It seems to me that the very few reports of successful cases are not sufficient to warrant me in using arsenic for sensitive dentine. Of course, it would be very gratifying if we should find that we are able to use arsenic in that way and get the prompt and desired effects that have been described, and that there are no ill results following, but I should feel like going very cautiously in that direction.

I presume your President has called upon me because of my known connection with the use of electricity in the treatment of sensitive dentine, the operation which has come to be known as cataphoresis. I wish to say in reply to one of Dr. Freeman's remarks that if you will look through what I have published in that connection, you will find that I am not one of those who have claimed priority in the application. I did bring to the attention of the profession what I think was perhaps the first successful instrument for every-day office use, and a method that could be used in ordinary practice, used constantly, and as often as occasion should demand, and which still remains, I think, a successful method, and, in my opinion, the most successful method for the control of sensitive dentine. I rather apprehend, from

what Dr. Freeman has said, that his position applies to the other things to which he has called attention. There is room for improvement, and one of the objects of my visit here to attend this meeting is to find out what the improvements are. I heard that some of you in New Jersey are getting ahead of us, who live in that little corner of New England from whence I come, and I wished to know what you are up to!

To me these meetings are mile stones in the career of modern cataphoresis. You may remember that a year ago I stood in this room and read a paper on cataphoresis, and after it was read I heard no more about it. Nothing was said. I believe there was one question asked and answered, but now I understand there are some fifteen or twenty different sorts of apparatus on the market for accomplishing cataphoresis, and I find every dental meeting has from four to five papers on the subject.

The experiments in cataphoresis to-day are just along the line of what we may use, what medications, what drugs we may employ to enable us to remove the present objections to cataphoresis. My continued use of that principal for more than a year and a half in my practice has only confirmed what I said a year ago, that the one objection to it is the time necessary to get the sensitive dentine under control. In a great many cases this is not an objection, because you save more time than you lose; in other cases it is an objection and the field for experiment still remains open along the line of what drug and what medication we shall use.

One point which Dr. Freeman makes, it seems to me, is questionable. He says that cocaine introduced into the system with the aid of electricity, by the process known as cataphoresis, does not produce the normal effect as when injected with a syringe. I challenge that statement. I think the same amount of cocaine, introduced into the system at the same time, will produce the same effect, whether introduced by cataphoresis or by syringe. One thing to be taken into account in applying cocaine by cataphoresis is that you do not introduce it so quickly as by the syringe; there is time for the system to take it up, distribute it and disburse it, and whilst I would not attempt to make any positive statement in contradiction to what Dr. Freeman has said on that point, I would express my opinion that cocaine introduced by cataphoresis will produce the same results as cocaine introduced by the syringe, if the same quantity is introduced within the same time.

DR. J. FOSTER FLAGG.

I came to this meeting as a decided opponent to what is called cataphoresis. Last year I saw enough of cataphoresis in five minutes to satisfy me that I had no use for it. There was no ice on that pond for me to cut! At the same time I have the highest possible respect for the energy and for the work which has been done by our *confrere* from the largest State in the United States. I am from Rhode Island myself!

I don't know that I have thanked any two men as I have thanked Callahan and Gillette, the former for bringing to our notice the sulphuric acid solution for the purpose of entering canals; the latter for causing me to advocate a method which I have administered in many hundreds of cases upon the most sensitive dentine with the utmost satisfaction; also, because of the fact that it has brought to me quite a number of letters from gentlemen who have been using what we have called for twenty years the dental helix, a little instrument, which, for all these twenty years, has done in about fifteen seconds everything that cataphoresis can do in five minutes, and has done in five minutes everything that cataphoresis can do in thirty, forty or forty-five minutes—forty-five minutes was the last experiment. Why I would not take forty-five minutes to prepare that cavity, fill it, have the fee in my pocket and the patient gone home! It struck me as absurd to be four or five minutes arranging things so as to prepare a cavity containing sensitive dentine, which could not be touched with a piece of bibulous paper; and then to make consecutive applications putting on your chalk, or bi-carbonate of soda, and then a little piece of bibulous paper *if you can*, and then applying oil of cloves for one minute by the watch, and trying it with bibulous paper, and so on *ad infinitum*.

Why, there is not one cavity of sensitive dentine in twenty, which, with three minutes preparation, can not be excavated and prepared with perfect facility and without the patient saying boo! Have I not demonstrated that in the clinic room over and over again? Why, I see the faces of some of my boys around here. Is it so? Certainly!

About 1859 we had a man named Francis, and this Dr. J. D. White, who was applying arsenious acid, as he called it. He did not know that it was not arsenious acid, and he called it that. He was applying it to sensitive dentine, but when he had a root to extract he would put the same stuff upon the alveolus, and then scrape the roots out! Well, it is wonderful what the tissues

will tolerate. If they would not tolerate it what would we do? But they tolerate almost anything.

About the same time this man Francis came along and gave us a secondary current, a gentle arrangement by means of which we were to extract teeth painlessly. At that time I was put on a committee of investigation. Give me young men! If I want work done I want some of the young men to do it. It is the young men who do the work, and I suppose it was because of my extreme youth that they put me on the committee.

So I went on that committee, and we worked on it until, without any preconceived arrangement, we each had our instrument and battery. We were told to try the current in the hand, and when it got just about strong enough, to make the break with an arrangement which we had on the floor, and then put the positive pole on the tooth and the negative electrode in the hand; then we were to make the connection and take out the tooth. It was not heaven and earth that came together. Oh no, it was hell and damnation! As I started to say, in spite of all that, when we came to compare notes at the end of our work, and we worked many months, we had extracted hundreds of teeth, and it was a strange coincidence that we all reported that in forty per cent. of cases the patients said they had felt no pain. Another forty per cent. of the patients said the method was as painful as any they had ever experienced in connection with the extraction of teeth; and in twenty per cent. of the cases the patients stated they never would have teeth extracted in that way again if they knew it. We all reached the same percentages.

The matter lay in abeyance, and I was then writing up a paper on arsenic. I was preparing a paper, as the result of Dr. White's thesis, to show his utter ignorance of the whole subject.

The Jefferson College Faculty gave Dr. White an award of special merit for his paper on arsenious acid, as being the best material for devitalizing pulps. He began, in the first place, by saying that of all the materials for the solution of arsenious acid, creosote was the best. That was what attracted my attention. That creosote could be an excellent solvent for arsenious acid was something which struck me as being strange, so I went to one of the professors and asked him if it was possible. He said: "I don't know, but I should think not." We took half a dozen grains of arsenious acid, placed them in some creosote, and mixed it in the mortar for quite a little while, then put it in a phial and set it on the shelf, and for a week or two my friend

shook this little phial in order to have the solution properly made. Then we let it rest, patiently waited for six long weeks, and then we tested it by a test which gives you the two-hundred-and-fifty-thousandth of a grain, and there was not a one two-hundred-and-fifty-thousandth of a grain of that arsenic dissolved in that creosote. That was a beautiful solvent! It was not dissolved at all; it is utterly insoluble in creosote.

On six or seven different points in that paper we made tests, and found every one of them utterly fallacious. But the Jefferson College Faculty gave him an award of extra merit for preparing a paper, not a word of which was true.

With the aid of a friend (an electrician by the name of Otto Flemming), some time in 1870, I think it was, I developed what is known to-day as the Dental Helix, and instead of getting a secondary current we gave a primary current, which is very mild.

We arranged it so that it should be under the control of the patient perfectly. In order that the one hand might be free we arranged double electrodes, by means of which the handles on the outside would be negative, and the other electrode positive, if you wished, and the power would run from these to the plate in the mouth in whatever position it was desired. There was no humbug about it from one end to the other, it simply did its work forcibly and nicely. We did not call it cataphoresis or any other "resis;" we called it substitution. We simply put into existence another sensation, which overcame the sensation of cutting the sensitive dentine, and if it was found that it was not more unpleasant to the patient than the cutting of dentine it was an acceptable sensation. The principle of that was simply this: A mosquito comes—it's a blessing we don't have any here—and he bites, and the bite itches until it becomes unbearable, then you scratch it and the pain is forty times worse than the itch, but you scratch it until you bring the blood and it feels better and better all the time. So we have the principle of substitution by the interrupted primary current; the interruption of the current brings about a sensation of sufficient magnitude to overcome the cutting of the dentine; you simply introduce a napkin, you do not put on a rubber-dam. Oh, rubber, damn!

Now, I admire a rubber-dam if I am going to introduce a gold filling, but except for that and the bleaching of teeth I would not tolerate for a moment the use of a rubber-dam. "When I make an application of arsenious acid I first apply the rubber-dam." When I read that, I said to myself you do not know one

thing about what you are going to do, or why you do it, or what the result would be; you do not know how to make your arsenical application; you do not know what advantage will come from it; you do not know how long to leave it there; you are therefore afraid you are going to do something you know nothing about, and all the time you do not know anything at all about it from one end to the other, if you apply a rubber-dam to make an arsenical application. That is the opinion I have. Then, again, when they are treating canals, they say the same thing. "When my pulp is devitalized and I proceed to extirpate that pulp, which I do thoroughly, I first place the tooth under a rubber-dam." Why, I have no time for that sort of thing. My teeth do very well; they remain with the patient as long as he lives, and make a respectable appearance in his mouth after he is dead!

Talk about acids, I am surprised to hear what you say about Fowler's Solution. Why, we made a test and placed it right on the pulp day after day and week after week, just to see if it did any harm, and it never did. It is an excellent application if you want to make a medicinal application. The only thing is, we do not consider it necessary to make a long application to obtund the sensitive dentine; that is the reason we do not use Fowler's Solution, as has been suggested by Dr. Freeman, to obtund sensitive dentine. But, as to doing any harm, why it is not so. You make an application and let the patient go out, and the next day it is all right. But, when it comes to making an application of arsenious oxide, called arsenious acid, I have entered hundreds and hundreds of teeth, the history of which would come to me that applications had been made for obtunding the sensitive dentine in operations three or four years before; yes, hundreds, and I have never missed finding the pulp dead under that application.

I always tell my boys that if they inflict pain upon a patient it is only because they do not know how not to. There is no need for pain. What we need is better work, more serviceably done, with perfect comfort to the patient.

DR. FREEMAN.

Mr. President, in the first place, in answer to Dr. Gillette, I wish to remark that I was in no way personal in saying that he claimed any priority in the work, because last year, when he read his paper, I handed him some dates on galvanic electricity.

In reference to the application of arsenic, or, as I used the language of Dr. White, arsenious acid: I only used those terms to show what arsenic had done, and was only using a record of

1839. The arsenic as was used by Dr. Register, of Philadelphia, or Fowler's Solution, is only one per cent., and is not applied as we generally apply arsenic, that is in portions as large as a pin head; we only apply for a few minutes a solution for which, after applying it, we employ an antidote.

Dr. Crouse remarked, at one time in New York before the First District Dental Society, that there were certain patents to be obtained upon the methods of cataphoresis, and I want to say that cataphoresis in reference to sensitive dentine is something old. The only things new about it are the more scientific instruments, the method of handling electricity and the introduction of cocaine, which flows down, as Professor Morton explains it, in front of the electricity, and in that way obtunds the sensitive dentine, not by substitution, but by anæsthesia, by the anæsthetic action of cocaine; and I would like to know from Dr. Gillette if he has found, where he has used a rapid cutting bur, or even a disc, in finishing off a filling, that those teeth upon which he had used cocaine were more sensitive than the teeth on which he had not. I find very sensitive teeth which I can excavate with an excavator, but on using an electric engine, where the rapidity of the bur is accelerated, I find the heat produced causes very excruciating pain.

DR. GILLETTE.

Perhaps I might say in reply to Dr. Freeman's question, it has not been my experience to find a tooth more sensitive to heat after it has been obtunded by cocaine in this way. I have not used an electric engine. I can see theoretically how Dr. Freeman might get that condition. A tooth in which the dentine has been sufficiently obtunded, so that it may be cut without causing pain, will still be sensitive to changes of temperature, if sufficient to cool or heat the whole tooth. If you take an engine bur, running very rapidly, and run it long enough to heat up the whole tooth, more heat would be generated before the patient began to realize it at all than would be generated if the dentine had not been so treated, and when it is heated up to that condition the patient will realize it more fully, and for a longer time after he first begins to realize it; the tooth will become very hot before he knows it.

DR. FREEMAN.

I think, if I recall some remarks made sometime ago upon certain experiments, that it was stated a tooth in which the same conditions were found, not only on the application of the prin-

ciple, but after the operation, was very sensitive to these changes, and I think these remarks were made in reference to the use of cataphoresis.

DR. GILLETTE.

That has not been my experience. It is quite frequently the case that a tooth may be sufficiently obtunded so that the cavity may be cut as freely as is desired without its being entirely free from sensitiveness to thermal changes, but I don't think I have found a case in which it was more sensitive when cocaine was used than if cocaine had not been used. With regard to that last question on the use of the bur, it would seem to me that if what Dr. Freeman states held good universally, I should have found it out, because it has been my habit, in many cases where the cavity has been thoroughly obtunded, or where there were two approximal cavities that have been treated in that way, to take the bur and work rapidly to get them both prepared before the cocaine effect disappears, and if there had been such an effect in my practice I should have known of it before this.

AFTERNOON SESSION.

FILLING OF CANALS AND PULP CAVITIES.

By J. Foster Flagg, D.D.S., Philadelphia.

In concluding the paper on the "Preparation of Pulp Cavities and Canals," which I read before you at our last year's meeting, I said that the work which dentistry has to do, after pulp cavities and canals are prepared, eventuates in such varied and diverse practice as would require for its discussion a paper longer than the one then presented. But what I desired to leave with you then for your thoughtful consideration was:

First. That other things besides the thorough extirpation of pulp tissue are of infinitely more importance in connection with canal work.

Now, I ask you, is it not the universal teaching that you are to thoroughly extirpate the pulp first and foremost? You are to reach the end of every canal if possible, and you are to thoroughly extirpate that pulp. That is what has been held up to you as the result, *par excellence*, to attain which you are to concentrate all your energy?

Second. "That in the effort to accomplish this *comparatively* unimportant result"—

Now, why do I call this a comparatively unimportant result? You may remember that I said that it would be better that

the pulp tissue should not be touched, better that you should leave it entirely in the pulp cavity, and put in your filling knowing that you had not touched the devitalized pulp, *than* that you should do certain other things which you might do; and therefore it is that this extirpation of the pulp tissue is *comparatively* unimportant.

Second. That in the effort to accomplish this *comparatively* unimportant result, frequently irreparable injuries are inflicted.

And this is the idea which I wish to leave with you solid this year.

Third. That the idea that any work, no matter how thoroughly or perfectly done *inside the tooth*, will preclude the possibility of future trouble is fallacious, and for the benefit of semi-vital teeth should so be taught.

Fourth. That it should be recognized that all the other numerous causes of periodontitis, besides putrescence of the pulp, are more likely to produce that trouble with semi-vital than with wholly-vital teeth.

You know there are sixteen or seventeen causes of periodontitis; putrescence of the pulp is *only one* cause.

Fifth. That in recognition of all this, pulp cavity and canal work should be such as would permit of future reparation if there be deficiencies, and of prompt and easy relief in the event of future periodontitis.

So far from such views being generally accepted, it seems to me that the whole line of thought, teachings and work, in this connection, as understood and practiced is diametrically antagonistic to them, based upon no foundation, so far as indications are concerned, and productive of no other results than those of likelihood of irremediable detriment and oftentimes of positive prevention of long-continued tooth conservation; and all this is *taught* from almost every chair of operative dentistry as the "*best!*"

I was fortunate in escaping from this thralldom thirty years ago, but I could not bring you the experience and the *results* of all these years had I not waited for them!

I feel that it was owing to an entire change of practice, together with the line of thought which inaugurated and sustained methods utterly at variance with all former, and largely of present ideas, that I have been able to establish what reputation I have as a treater of teeth, and that I have been able to impress the truths of my lectures, in this connection, by clinical examples of

long-continued maintenance for usefulness of teeth which had been abandoned as "hopeless" by those who had achieved the title of "eminent" in our profession.

It is this which impels me to bring before you the paper which I now present for your consideration. Having entered and prepared the pulp cavity and one or more canals pertaining to any given tooth, the next step is one which certainly has given dentistry a theme for voluminous discussion.

That these canals shall be filled seems to be practically, universally conceded, and yet it has been contended by some that filling is not necessary, and experiments with *fully formed* teeth show unfilled canals free from moisture, even though the teeth had been immersed in clear water (much thinner than serum) for many months, and yet that the canals shall be filled seems to be conceded, and for myself I should not think of letting a canal go unfilled if I could fill it.

But *for what* is it to be filled? That is the question which I ask you. Upon this question dentistry is divided; were it not so we should not read that some fill with gold; some with amalgam; some with oxychloride; some with chloro-percha; some with wire; some with hickory sticks; some with salol; some with balsamo del deserto; some with cotton, and some with medicated pastes. This variance rivals the shotgun prescriptions of general medicine and should make dentistry ashamed!

I have said "*for what*" and not *with* what, advisedly, for in dentistry as much, if not more, possibly, than in almost any other calling, the means utilized are with an accurate view to the accomplishment of some specific end.

Now if gold be indicated, cotton can hardly be favorably regarded; if chloro-percha be the desirable thing a hickory stick will make but a doubtful substitute, so the question is very pertinent:—*for what* is the canal and pulp cavity filled?

In dental work it will, I think, be conceded that the effort is ever to replace that which is lost with something which will, as far as is practicable, supply the deficiency, and, if possible, make things better than they were before.

It therefore behooves us to consider the changes incident to the loss of the pulp, that we may have a definite idea as to what it is which we are to try to replace.

What are the functions of the pulp?

First. The formation of dentine and the maintenance of its vitality.

Second. The induction of "tubular consolidation" as protection against pulp irritation concomitant with advancing caries.

Third. The recalcification of decalcified dentine.

Now think what a work that is? Only think how the teachings have changed since the old days when Professor Arthur was tabooed and ever-to-be-sat-down-upon, because of the fact that he advocated leaving decalcified dentine in cavities and filling over such decalcifications! If a pulp was to be endangered by the removal of decalcified dentine, then the decalcified dentine was not to be removed because the pulp would recalcify it. What is the advanced teaching of to-day? Is it that the less decalcified dentine there be removed the better; it is that the only removal of decalcified dentine is of such as will militate against the integrity of the filling. The pulp is not thought of, no one says a word about it; we only recognize that you leave a large mass of decalcified dentine within the cavity and fill over it. So that the integrity of the filling is not interfered with, the dentine will be recalcified and the tooth, in six or eight years, will be in better condition than it was before.

Fourth. The formation of secondary dentine, when, from attrition, deep-seated caries or fracture, such loss of dentine has occurred as necessitates for pulp conservation such deposition within the physiological pulp cavity.

It is almost superfluous for me to say that with the loss of the pulp we lose every one of its attributes, and that we are unable, in any degree, to supply its place.

Now this is a serious proposition. When we lose the pulp of a tooth we lose an organ, the attributes of which we can in no wise replace. We can do nothing which shall accomplish one thing which the pulp did.

Of all the efforts on the part of dentistry this is, unquestionably, the least successful, but, if we cannot do as well as we could wish, and as well as we do in every other direction, what yet remains for us to consider, and how can we best make some amends for the great loss which the tooth has sustained? That highly organized tissue, the dentine, has lost its vitality; the root portion of this tissue rests against living cementum nourished by pericemental membrane; this dentine, being dead, must gradually become changed from an aseptic to a septic substance, which necessarily must, in time, become an irritant to the cementum and its membrane.

The preservation of this dentine is then *the only thing* that we

can *try* to do in place of all that could be done by the pulp which has been lost.

But again, there is a possible influx of moisture, under circumstances entirely different from those which formerly existed. Naturally the pulp cavity was always full of moisture, but it was the moisture of nutrition, the moisture which came and went, and which was constantly renewed in its subservience to life work.

Now all is different. What moisture should not find its way into the empty canals and pulp cavity would find no egress, and would but add more material for decomposition and the evolution of mephitic gas. Hence the prevention of ingress of moisture would seem, ordinarily, to be another reason for filling canals and pulp cavities.

Are there any other reasons? If so, I would ask for them, for no others have ever presented themselves to me.

And now it is in place to discuss upon some tangible basis the merits of the various materials used for this purpose. First let us consider gold as the one which has been longest used and the one which even to-day is largely taught and regarded as the "best."

Why is it the best? What single attribute has it which makes it good at all?

That is certainly a very pertinent question!

Can it do anything toward preserving the integrity of the dead dentine? Is it any better than tinfoil or facing amalgam as a barrier against the ingress of moisture?

If it has no antiseptic value, why is it needful to fill the whole canal and entire pulp cavity with it? If exclusion of moisture is the object sought, how far does moisture creep beyond the first properly inserted and consolidated pieces? And if it does not get beyond them what is the object of all the rest?

Certainly many of us have filled canals as solidly as possible with gold. I have filled many canals as solidly as I could, thus making what I was then taught to be, and what I then believed to be, thorough operations of the very best kind, and it cannot be disputed that many men do that to-day.

It was partly because I could give myself no satisfactory answer to these questions that I early abandoned gold as a filling material for canals and pulp cavities, and that I have made no such use of it in thousands of teeth which I have since treated, and certainly no such use of it in the thousands of teeth which I

have, with great labor and difficulty, re-treated in which it had proven unavailing, although introduced with marvelous manipulative ability.

Next I relinquished amalgam and also dissolved base plate (now called chlora-percha), because with a few years of experience with them during the late '50's and early '60's I had come to regard them as the worst materials ever employed for this purpose, an opinion to which I adhere now, most decidedly, as a deduction from the nearly *forty years* of canal work, in which I have indulged as practitioner, and demonstrated in my clinics as teacher.

As with gold, neither of these materials possesses one valuable attribute, and both possess the very objectionable ones of easy insinuation into very fine and inaccessible canals, and the impossibility of subsequent removal, should removal, for any reason, ever be necessary.

Properly pointed and nicely introduced hickory sticks and gold wires were the first deviations from the solid fillings of canals, and, though the idea of "filling space" was still adhered to in the bulbous portions, the recognition of the easy removal seemed to be the first knowledge of a requirement, which, by 1865 or 1870 had been forced upon the observation of some few dentists.

By this time my practice was almost exclusively confined to "treating teeth," and even this was again restricted to the poorest, softest and least properly calcified, as with these, *clinical experience* had amply shown the value of "choice of filling material" and that this choice was practically confined to the "plastics."

I have been asked to-day if I would state once more upon this floor, because some few, as yet, are not aware of the fact, that my reason for abandoning gold was because I abandoned the treatment of any such teeth as I judged needed gold filling.

Whenever a tooth came to me of such structure that I, or any dentist, would fill it with gold, I was in the habit of saying to the patient, "I have too many teeth of the poorest, softest and most troublesome kind to take care of; I cannot spend my time taking care of such teeth as yours. They can be nicely treated, easily filled and would do you good service." So it was that I abandoned the use of gold; not because I did not know thoroughly, as I have stated to you, the advantages that gold has, and that it is the only one filling material upon which there is no discount whatever when it is properly used.

Thus it was, that being constantly brought in contact with non-resistant, non-recuperative tissues, I had vastly more than usual opportunity for noting the results of varied pulp cavity and canal work, both in my own hands and from those of many excellent practitioners. Then it was that the notation of results had already begun to assume large proportions, and that I was able to *know* that of six thousand cases of reasonably and even excellently "well-treated teeth," nine in every ten gave trouble in less than twenty years.

Now I want you, friends, to think over that statement. You know that I do not make statements unless I have the facts. I have followed six thousand cases of treated teeth which had to be re-treated, six thousand cases of teeth in connection with which pulp cavity or canal work had been from some cause or another a feature in the treatment, and in those six thousand cases, of which some were excellently well treated, others not so well, and others poorly treated, nine in every ten had given trouble before twenty years of that tooth's life had passed over.

In this line of work three-fifths of these peridental irritations had to be credited, most largely, to the *length of time during which the peridentium had been doing double duty* as the nourisher of tissues in contact with dead tissue—the dentine of pulpless teeth.

It is in this connection that I desire to impress the first reason for filling canals and pulp cavities, for it was noted that just in proportion as effort had been made to maintain the integrity of the dead dentine, so treatment was successful in the most unpromising cases.

It is now important that the very decided difference between "pulpless teeth" and teeth containing portions of remaining pulp should be clearly recognized, for, when it is remembered how very frequently teeth, in which pulps have been devitalized, are spoken of by those who performed these operations as "dead teeth," it should be accepted that cases of almost complete extirpation of the pulp might as frequently be referred to as "pulpless teeth."

Cases of peridental irritation from putrescent pulp are therefore *never* to be regarded as from pulpless teeth, but always as from teeth containing a sufficient quantity (be it great or small) of very objectionable pulp.

This brings us to the statement that in a vast majority of peridental irritations associated with semi-vital teeth, more relief is

given by opening canals than by any other means used, and *frequently* more relief is given by this than by all other means combined, and this no matter from what cause.

Indeed, so potent a factor in treatment is this opening of canals that in some instances teeth will remain comfortable only so long as canals remain open, and persistently give trouble almost immediately upon the stopping of the tooth.

You all readily recognize that in making this statement I bear in mind the great improvement which has occurred in the treatment of such teeth. Twenty-five or thirty years ago we frequently met with teeth which would not bear stopping up; ten years ago there were less, and to-day we meet with very few, but still we meet them.

In such cases a "vent," either through the tooth or gum, must be established, or the more radical operation of extraction and replantation performed with the hope, and sometime with the result, of success.

But it must also be recognized that with every such infliction a greater amount of secondary or scar tissue supervenes, and that with this the liability to future trouble is increased proportionately.

Nearly twenty years ago (*Cosmos*, November, 1877) I wrote: "It has been decided that a pulpless tooth is far better than no tooth, but it is equally decided that sooner or later, subject to a variety of contingencies, trouble will *probably* develop, and that it behooves every practitioner to so act as will best provide against the occurrence of this probable evil."

The added nineteen years of experience has but thoroughly confirmed this opinion, and has made warnings to my classes only the more positive and the more emphatic.

This, in turn, brings us to the consideration of other than reasons for the *filling* of canals and pulp cavities, as it is seen that probable need for *unfilling* may exist; therefore it is that I would give you as of importance:

First. That canals should be filled with medicaments, non-poisonous, non-irritating, soothing and of *long-continued* antiseptic power, and that these should be introduced in fluid, semi-fluid or paste form, or, when possible, upon a vehicle which absolutely maintains its integrity.

Second. That the filling should *fill* as perfectly as possible in order that while maintaining anti-sepsis it should aim to preclude, as much as possible, the ingress of moisture.

Third. The filling should be easy of introduction, not that this is an essential, but that, everything else being equal, it is certainly desirable.

Fourth. That it should be easy of removal, which attribute, while it is of but little moment at the time of filling, becomes of *paramount importance to the patient*, if, in the course of time, it means the long continuance of suffering, or the affording of comparatively prompt relief.

Should our patients never be thought of? Should they not be thought of first, last and all the time? In thinking of them most emphatically we think of ourselves, in doing for them we do for ourselves.

The medicaments of which I can best speak are those which I have longest used. In my experience no others have been more satisfactory than the oil of cinnamon and the oil of cloves as antiseptics, and the acetate of morphia and sulphite of lime as paste makers. For some of the medicaments, which, at suggestion, I have used in canal work, such as creosote, oily carbolic acid, bi-chloride of mercury and salicylic acid I can only say that I have entirely discarded them, while for iodoform I have but scanty words of praise, and most infrequent use.

I have *no* use for bedbug poison in my office!

The modern medicaments, such as eugenol, campho-phenique and fluo-silicate of soda (sodium-silico-fluoride) have made excellent records during the last decade, but these must do many years of good work before they can be ranked as *better* than those that have already done from twenty to thirty years' service.

For the newest and most extensive line of germicidal antiseptics, with all their ingenuity of manufacture and compounding, with all their comparative tests of merit and their long lists of testimonials, we can but say that the same long and careful trials as have been given to the "old reliables" must be given to them before their value can be positively established, while it certainly cannot but be noticed that most of those who testify enthusiastically are those who have no long record of continuous methods, but who are disposed constantly to favor new things.

Notwithstanding the occasional assertion of a few that they enter, extirpate from and fill to the extremity of even the finest and most tortuous canals, I think that it will not be disputed that *we*, of the large majority, do not do so.

There are three usual grades of canals; those which are accessible, large, easily entered, and which can be explored to their

ends without difficulty; those that are yet accessible, but which are small, not easily entered and which it is always difficult and sometimes impossible to satisfactorily explore, and finally those which are much less accessible, almost or quite impossible to enter, and absolutely impossible to explore for any distance, either on account of fineness or of tortuosity.

Besides these there are yet other canals, which, although neither inaccessible nor small, are found in roots, the shapes of which preclude the possibility of following by either drill, broach or finest and most flexible probe, not only in the mouth, but even with the teeth extracted and in the hand.

I have shown so many of these in clinics that their existence has come to be a matter of course, exemplified not only by excessive tortuosities, but even more markedly by the "bayonet" and "adjunctive" roots, the canals of which latter frequently open at right angles into the canals from which they diverge, thus rendering it not only impossible to follow, but equally impossible to know of their existence until after the extraction of the teeth.

And yet it is with these, as with the others, that we sometimes have to deal, and it is not infrequent that we find such complications associated with the very teeth which we most desire to save.

For the filling of the most difficult and most unsatisfactory of these canals I should suggest the most searching, soothing and *permanently antiseptic* medicaments, such as oil of cinnamon or cloves, eugenol and campho-phenique, and for probational purposes, such medicaments as electrozone, borolyptol and solutions (two to four per cent.) of formalin, not as curative, but as prophylactic treatment.

For the filling of the less difficult and yet not satisfactorily prepared canals, I would again suggest pure medicinal fillings in order that the greatest amount possible of some material that may *do some good* shall be introduced, but I would also suggest that a longer continuance of benefit may be assured by greater consistency of material, and for this purpose I employ "pastes" of varying degrees of inspissation, composed of acetate of morphia, sulphite of lime, antipyrine, or fluo-silicate of soda softened by oil of cloves or cinnamon or campho-phenique, and *probatonally*, balsamo del deserto, or even safol.

For the filling of the accessible, large and easily entered canals, it is found better that a vehicle for the introduction of the

medicament should be used, for the double reason that a sufficiency of antiseptic can thus be placed, and that a better preventive to ingress of fluid can thus be provided.

It was early noted that the "pinhead pellets" of cotton, which almost always preceded the excellent gold canal fillings of the earlier operators, if removed for relief to subsequent peridental trouble, came forth permeated with the odor of creosote or cloves, or tainted with the odor of putrefaction from remaining portion of pulps, as the extirpation had been more or less thorough, but in either case its *structural integrity* seemed perfect.

I argued that if this was maintained in pellet form, it might also be in form of taper-twist, and therefore used *natural cotton* (not absorbent) as the vehicle for medication, and the taper-twists were gradually increased in size until each *almost completely* filled its canal.

In normally formed roots this material was found, by experiment, to subserve nicely, the purpose of excluding moisture, and in cases of large foramina or unformed roots a portion of base-plate, and in later years, temporary stopping, was incorporated with the small end of the taper-twist, and being warmed, was pressed into place; the cotton was medicated and packed firmly as usual.

Year after year has increasingly demonstrated the wisdom and utility of this practice, as hundreds of teeth thus treated grew into thousands, and the thousands into more than ten thousand; and of these, treated and re-treated quickly, easily and comfortably during the past thirty years, I do not know of *fifty* which have been lost.

I was up at Medford visiting a young friend of mine who has now been married about twenty-six years. I was speaking with him of a tooth which I treated for him before he was married. Referring to this lower molar which came to me in a badly diseased condition, I said to him: "Joshua, how about that tooth which I treated for you some twenty-six years ago, I suppose it has all gone." He said: "The top has, Doctor, but the roots are there."

What a commentary that was upon the treatment of the tooth. We all recognize that it is the roots which give trouble, and his reply was: "The top is all gone, but the roots are there."

Into the mouth of each canal a tiny pellet of cotton is introduced, which is called a "guard ball," as it more surely than in any other way guards against sudden or unintentional withdrawal of a canal filling.

Upon these guard balls a filling of temporary stopping is inserted, covered in turn with whatever resistant material may be indicated.

It is now twenty-four years since, desiring acceptable, corroborative testimony regarding the maintenance of integrity of the *vehicle* which I was using, I submitted removed cottons of five, six, seven and eleven years' service to Professor Joseph G. Richardson, M.D., then microscopist at the University of Pennsylvania. The following was his report:

PHILADELPHIA, May 16th, 1872.

Professor J. FOSTER FLAGG, D.D.S.

Dear Sir:—On examining the portions of cotton which you handed me in your office, and which you informed me had been imbedded beneath plugs, in the fangs of teeth, for five, six, seven and eleven years respectively, I found that single filaments unraveled from the middle and each extremity of the last of these fragments (entombed eleven years ago) when investigated both dry and wet, under powers of 220, 440, 1200 and 2400 diameters, displayed clearly the ordinary structure of cotton fibre and *exhibited no evidence of disintegrative change*.

The other pieces, similarly inspected, were likewise apparently unaltered.

Very respectfully yours, etc.,
(Signed) JOSEPH G. RICHARDSON, M.D.

Again, desiring further testimony as to *continued* integrity, I submitted to Professor Ernest Laplace, M.D., microscopist of the Medico-Chirurgical College, during the winter of 1893-94, six specimens for microscopic examination.

Of these No. 1 was a new, unused "taper-twist."

No. 2. A cotton canal filling of over ten years' service.

No. 3. Cotton canal filling of twenty-two years' service—left upper molar.

No. 4. Cotton canal filling of seventeen years' service—right upper bicuspids.

No. 5. Cotton canal dressing of one week.

No. 6. Cotton canal filling of twenty-three years' service—left lower molar.

The results of his examinations were given to me by him as follows:

Results of Professor Laplace's examinations:

No. 1. Twisted fibres for filling material—new; contains little foreign substance, thicker at small end. This foreign material probably dust.

No. 2. Piece of cotton from a canal; ten years old.

No apparent disintegration of cotton fibre. Large amount of amorphous foreign material adherent to fibre; more of this material toward tip than further up.

No. 3. Piece of cotton dressing from left upper molar, twenty-two years.

No apparent disintegration of fibre. Foreign material more gathered in lumps; not disseminated like former.

No. 4. From right upper bicuspid, seventeen years.

About same amount of foreign material as No. 3, but not so massed or lumpy. No apparent disintegration of cotton fibre.

No. 5. Cotton dressing for treating. One week old.

Fibres both singly and collectively are covered with foreign material. Foreign material around fibres joining them together. Fibres good.

No. 6. From left lower molar. Twenty-three years.

Most of fibres free from foreign material. About one-third have foreign material. Here and there masses of this foreign material.

Professor Laplace offered to have made two micro-photographs from No. 1 and from No. 6, and said that no one could tell the difference. I thanked him and told him it was *sufficient that he said so*.

I have felt it my mission to bring all this before you, because there are those who tell patients that their teeth give them trouble *because they were filled with cotton. This is not true. And I am glad that thousands of patients know that it is not.*

I never told patients that their teeth gave trouble *because they were filled with gold. But I have told hundreds of patients that the long, tedious, painful road to relief was because of these gold canal fillings, and that was true!*

And I have told them that I would so fill them that, if trouble should come again, relief would be quickly, and easily, and comfortably given, *and they have found it so.*

I have worked sometimes unsuccessfully in efforts to remove badly misused amalgam and wretched chloro-percha, "thoroughly" pumped in! And I have regretted sincerely, for the patients' sakes, that such work had been done.

I have in my collection roots of teeth which have beautiful fillings of gold in their canals, introduced as "better practice," after removal of my canal cotton for relief. And when trouble again came, *caused by the gold*, so "excellent" was the work that relief could not be given. The crowns were broken off in attempts to extract, and the roots were brought to me by the luckless patients for ether, chloroform, *and removal.*

Is it strange that I wear these scalps at my girdle as trophies gathered on the war path? Were I more than human I might not do so, but I am not.

"Cotton canal filling" has been to me and mine a blessing beyond computation; having given it to a patient and having explained its "why and wherefore," I feel that I have clearly, intelligently and "thoroughly" done my duty, in that I have done well, as shown by clinical experience, not only for the present, but that I have provided, in the best possible degree, for years of comfort, and, vastly more than this, for *prompt relief, bestowed most gently*, in the event of future trouble.

DISCUSSION.

DR. FREEMAN.

I think that I was down on the programme at one time for a paper on a rapid method of filling roots. I had intended to demonstrate that before the Society. I have been using the method for the last eight years. I use a hypodermic syringe, injecting a saturated solution of iodoform in chloroform and then pack gutta-percha cones, introducing them one after the other. In that way I have an antiseptic condition of the root canal, objectionable, perhaps, to Dr. Flagg, on account of the possible need of removal of this gutta-percha filling. The way I removed it is as follows: If any after trouble should arise, I heat the gutta-percha filling with hot-air syringe and then introduce a warm instrument and remove it. In that way I have often cleaned out a canal with very little difficulty.

DR. WELD.

Dr. Flagg has spoken of different methods, and two of these I heartily endorse. Another method was mentioned by Dr. Freeman. I also have a method, and so far as I know it has not yet been published. What I refer to is the chemico-metallic method of filling roots. It is a wire, if you choose. It is not a gold wire, nor a platinum wire; it is a composition of silver, tin and zinc. If any one has ever tried to draw that combination into a wire, and has succeeded, I should be very glad if he would tell me how to do it, for I have had a great deal of trouble in that direction. However, the principle of filling by chemico-metallic method is this: The idea is based upon the principle that a certain combination of acids will act rapidly upon certain metals. If you insert a probe in the canal and touch a drop of acid to this metal, chemical action is immediately produced. Gas is eliminated in the pulp chamber; at the same time the acid forms an in-

destructible oxide around the metal, and the action of the acid upon the salts of the metal, in combination with the dead matter in the root, forms an albuminate of the alloy which is used. In other words, the matter is coagulated; it is "mummified," as someone stated to-day. Its character has been changed, and I know satisfactorily that there can be no further change in it after that. I have had a year and three months' experience with it, but I believe that the method is proper, and that these inaccessible roots can be filled better by this method than by any other. I believe it is a physical impossibility for any man to do what I can do unless he adopts this chemico-metallic method.

DR. LEROY.

It has always been such a task to discover some method whereby we could get positive results, that it has been a hobby with myself to devise some means whereby we could get the most permanent results with as small an expenditure of energy as possible. I do not claim to reach the end of all roots as some do, but I do claim to clean roots as thoroughly as they can be cleaned, and I then fill with a material that has not been mentioned here this evening, although it has been used for years. It is eucalyptus and gutta-percha. The eucalyptus acts as a solvent for the gutta-percha, and it is more readily carried into the entire canal. I fill with that material in a fluid state, and follow it with base plate gutta-percha, or one of those small gutta-percha cones prepared by the dental manufacturers, in that way causing the eucalypto-percha to be forced more perfectly into all portions of the root canal.

Now, as to the subsequent removal of the gutta-percha, I have not at the present time had occasion to remove even one of these fillings in an experience of between three and four years, but I should judge that it would not be very difficult to remove the material should the tooth give subsequent trouble. However, I should like Dr. Flagg, in closing this discussion, to touch upon the subject of the use of eucalyptus and gutta-percha, or of eucalyptus, in the treatment of pulp canals, because I have such confidence in him that I should like to hear his opinion in the matter.

DR. TWILLEY.

I have rather preferred to listen than to talk. I look upon Dr. Flagg with that reverential feeling with which a child looks upon a father.

DR. FLAGG.

Thank you, my son. (Laughter.)

DR. TWILLEY.

Still I know he is one of the boys, and just as young as most of us. As I sat here drinking in the words of wisdom as they fell from his lips, I could not help but run back in my mind to the time when I was serving an apprenticeship in my father's office. If any of you have served under your Dad you know what that means.

He would often say to me when I was about to fill a tooth: "It is all very well to put that stuff down there, but how is it going to be gotten out?" I have spent many an hour trying to get out of a root that which only took a few minutes to get there, and I appreciate fully the wisdom of not sealing up the tooth too tightly, because the time might come when you would wish to draw out the filling. I know there is a certain percentage of teeth that come to my hands, the roots of which it is a physical impossibility to thoroughly seal, and I am very glad to say that oil of cinnamon and oil of cloves enter largely into my treatment of root canals. My effort is always to get a little of them down at the end of the root, and I was very proud to hear Dr. Flagg telling me that I was right. I have used gutta-percha on one or two occasions I admit, but I will never do it again, as I had occasion to try to get one such filling out. Now, I make an effort to fill a tooth in such a way that should I wish to get it out again I can do so with as little pain as possible to the patient, who comes to us with a face more or less swollen and suffering the tortures of those who do not go to heaven.

DR. J. ALLEN OSMUN.

When I first commenced the study of dentistry I read Dr. Flagg's book, which was then new, on the treatment of teeth and the filling of pulpless roots, and his teachings have tintured my practice very largely for the last twenty-two years.

My plan of treating a tooth is something like this: The great point that I strive for against everything else, the great cardinal principle, the chief corner-stone, is cleanliness. I attain that by various methods, sometimes with hot water, as hot as can be borne; at other times, when I have an oily substance in the tooth that does not seem to be dissipated by the hot water, I use sometimes ether, sometimes chloroform, various things that suggest themselves for the particular case which I then have in hand. I have always tried not to be confined to any particular plan of action. I find that my patients are not all moulded in the same mould. I fill a tooth for one patient with all the care, pa-

tience and skill that I possess, and in two or three days I have a fine time; I fill a tooth similarly for another patient, with the conditions the same, as near as it is possible for me to determine, and have a most beautiful result.

After the tooth is thoroughly cleansed, I treat it in various ways in order to relieve any soreness or irritation which may be present, and when in my judgment the time has arrived when I can proceed with the filling, the first thing which I seek in that tooth is absolute dryness, and in order to secure that, after I have tried the rubber-dam or any other course that seems proper in order to exclude moisture, I take various sizes of probes and heat them, dry out the root, until I get it as dry as possible. Then one of my favorite methods is to deluge the cavity with oil of eucalyptus; I do not use much oil of cloves or cinnamon. Then I take a vehicle, which has always been cotton, and upon that apply whatever medicament I deem best with that particular tooth. Sometimes it is one of the pastes, and sometimes cotton in carbolyzed oil, and sometimes eucalyptus. I have used various medicaments, but almost invariably I have used cotton as the vehicle. I have had one or two experiences with cones. When they were first introduced I tried them, and one went about the thirty-second of an inch beyond the apex, and every time the patient bit on that tooth there was music. I have ceased using them ever since I discovered that danger.

DR. F. T. VAN WOERT.

The talk which we hear from time to time of perfect root filling in all cases, and the absolute perfection of the material used, has become very irksome to me, for I know that it is not true, and that it is an utter impossibility for any one man to attain that amount of perfection, and when a man of Professor Flagg's ability rises before a society like this, and proclaims that such men are stating what is not true, I feel gratified.

The State Society of New York, as well as this same body, has listened to some of the worst propositions that were ever propounded, and when a man gets up here and tells you that he enters a pulp chamber and reaches the foramen of every root, regardless of its shape, he may be deceiving himself, but he does not deceive me, and I do not think he deceives any other gentleman in this room.

I wish to say just one word in regard to the material used for filling roots, and that is that it makes very little difference what it is so long as it is an antiseptic, easily handled and, as Dr. Flagg

says, readily removed. For that purpose I have used for a little over a year and a half, paraffine and iodoform, melting it into the cavity with a copper wire made in the form of the Donaldson broaches; the preparation is carried to the end of the roots by capillary action, and afterward, by simply pressing cotton upon it, the filling will come away intact, showing the shape of the root canal. To me this has been one of the most satisfactory fillings that I have used in my practice.

DR. FLAGG.

I thank the gentlemen present very much indeed for the kindly interest which they have taken in my paper.

I came here with my heart very full, and I go away with it fuller, and so I propose to close this discussion.

EXCISION OF THE INFRA-ORBITAL NERVE.

A woman, aged thirty, native of Austria, had for five years suffered almost constantly with pains of a neuralgic nature seated in the region of the right superior maxilla, presented herself to Dr. Brophy. All former efforts to gain relief had been futile. A careful examination was made, and the morbid condition pronounced neuroma on the infra-orbital nerve, and the operation of neurotomy was decided upon. Briefly, the operation consisted in making an incision commencing just over the right lateral incisor, and extending to a point opposite the first molar. The soft parts were then elevated until the infra-orbital foramen was disclosed, when, with a tenaculum, the nerve was grasped at its exit from the foramen, at which point the neuroma was found. The diverging branches were then dissected out, the trunk was seized by forceps, drawn forward or out of the foramen about one inch, and excised. The wound was then cleaned antiseptically, iodoform gauze was placed in contact with it, and the patient dismissed.

This is the first case on record where the operation for division of the infra-orbital nerve within the foramen has been performed without making an external excision. The result of the operation has been gratifying in the extreme. The patient enjoys immunity from pain, and sensation of the part, which was in some degree interfered with, is returning and has already become almost normal.—*Dr. W. R. Meek, Stom. Gazette.*

OUR QUESTION BOX.

QUERY:—Patient apparently healthy; aged 40; male. The eight anterior superior teeth eroded, varying from slight grooves on the bicusps to one-quarter of the labial surface on the central incisors. The lower teeth similarly affected, with some recession of gum tissue. (1) *Would you fill; if so, with what?* (2) *What local treatment?* (3) *What constitutional treatment?*

ANSWERS—(1) If erosions are superficial, the lesions are ground down with a very fine grain corundum point; the parts are then touched with the actual cautery, and then carefully polished with oxide of tin. If the erosion is too deep, the cavity is enlarged, and before being filled is touched with the actual cautery. Gold is used if the patient does not show his teeth; if he does, inlays of pieces of porcelain or natural enamel are used. If the erosion is very small either oxyphosphate or oxychloride. If the erosion is situated at the neck of a tooth, the cavity is enlarged so that it extends some distance below the gum, so as not to allow any dental tissue at the marginal line of the gum more than necessary. The cavity, before being filled in these cases, is always touched with the actual cautery. (2) I always recommend to patients suffering from erosions the application, at bed time, over the involved teeth, of a powder, composed of equal parts of carbonate of lime and carbonate of magnesia. (3) No constitutional treatment used, except in the gouty erosions met with in gouty subjects, in whom the internal administration of alkaline mineral waters, vichy, etc., has given some favorable results.

A. C. Hugenschmidt, Paris, France.

(1) Fill the worst with gold; wait on the others. (2) Antiseptic wash—hydronaphthol. (3) Nothing other than good regimen to promote general nutrition.

D. R. Stubblefield, Nashville, Tenn.

If the grooves are not deep I would not fill. If I filled, it would be with gold. I should advise rubbing the teeth with prepared chalk at night before retiring.

C. S. Stockton, Newark, N. J.

If interference seemed indicated, I should fill with gold, lining the wall nearest the gum with tin.

J. Y. Crawford, Nashville, Tenn.

Cut out the erosions and polish the surfaces, where it can be accomplished without disfiguring the tooth too much. Otherwise I should fill with gold.

George Eubank, Birmingham, Ala.

(1) Would fill with gold. If the incisors suggested the propriety of it, should insert porcelain inlays. (2) Would apply hot air and creosote in cavities just before inserting fillings. (3) None.

George Evans, New York.

If exceedingly sensitive would fill with oxychloride of zinc, and from six months to a year later, cut this out and fill with gold.

J. Edward Kells, New Orleans, La.

If the grooves are deep, and the tooth tissue hard, I would fill with gold (hard filling). If the teeth are soft, I would fill with gutta-percha. If the

grooves are not deep, æsthetic considerations would prevent my filling at all. Local treatment of the gums, same as that for loculosis.

J. N. Farrar, New York.

Should they be not sensitive I would not fill. On the contrary, I would first fill with cement or gutta-percha, to be followed with gold at a later period. The shallow grooves I would polish out.

Gordon White, Nashville, Tenn.

I would fill with cement if the teeth were soft or chalky; if not, would use gold. Would prescribe prepared chalk packed into the pits and between the teeth.

T. M. Allen, Birmingham, Ala.

(1) Yes. Soft gold, finishing with hard. (2) Perfect cleansing. Apply Robinson's remedy, followed for a day or two by dilute tr. iodine. (3) Hypophosphite of lime and soda.

J. H. Allen, Birmingham, Ala.

(i) Where erosion is superficial, would dress down and polish; if deep or much decalcified, would fill with gold. (2) Antacid. (3) As conditions might indicate.

Benj. C. Nash, New York.

My own teeth are much abraded, mainly, at first, by pumice, in dentifrice. Grapes and other acid fruits, and vinegar, give the abraded surfaces a rough feeling, and make them very sensitive, after which they gradually become normal in sensibility and highly polished. Prophylaxis would include the avoidance of strong acids and abrading dentifrices. I usually fill for a year or two with zinc phosphate, and then with gold. Am not certain that acid mucus may not sometimes be a cause.

J. S. Latimer, D.D.S., New York.

(1) I would fill if dentine was involved, using any material which would be most compatible. (2) If mouth is acid, use an alkaline mouth wash. If teeth sensitive and not deeply eroded, use chloride of zinc. (3) None.

Dr. S. Freeman, New York.

On account of the age of the patient should treat neither locally nor constitutionally, unless accompanied by some marked disease of the gums. When it became absolutely necessary should fill with gutta-percha.

Dr. W. R. Blackstone, Manchester, N. H.

To determine a rational treatment of erosion, its cause first claims attention. Does its constant appearance at points nearest the pulp cavity indicate an origin from that direction? That the disease occurs in dead teeth and over gold fillings does not favor, nor entirely disprove, the hypothesis. (1) Fill large cavities with gutta-percha, small ones with gold or tin, and obscure ones with copper amalgam. The disease frequently recurs at the edge of the filling. (2) Have not observed good results from any other treatment. Erosion sometimes ceases spontaneously for long periods and recurs again. (3) Whatever will promote general health.

John T. Metcalf, New York.

I would make neat and appropriate undercut cavities, and fill them with silver-tin-gold alloy. Give the fillings a high polish and direct the daily use of the brush and polishing powder upon their surfaces. Result: immense satisfaction to all concerned, and an interchange of good feeling, during which the dentist is glad that he is a dentist.

J. W. Clowes, New York City.

Would fill with gold. If centrals would exhibit too much of the filling, would crown. For local treatment, would use an alkaline mouth wash and perhaps precipitated chalk rubbed between the teeth on retiring. For constitutional treatment, have but little faith in it in such cases as the above.

J. Allen Osmum, Newark, N. J.

(1) Should fill bicuspid and others that were similarly affected with gold. The susceptibility to thermal shock would determine the treatment of others. (2) Alkaline. (3) None.

John I. Hart, New York City.

I should place on the six anterior superior teeth gold caps faced with porcelain, and fill all others with gold as far as possible. I have never seen any good accomplished by treatment in such cases.

J. B. Littig, New York City.

(1) If the enamel and dentine are hard, fill with gold. (2) Bi-carb. soda night and morning under the lips. (3) Cannot tell without further information.

Chas. A. Meeker, Newark, N. J.

DENTAL THERAPEUTICS.

In the *International Dental Journal* for May, Dr. E. C. Briggs, of Boston, says that he is opposed to dentists going very much into the constitutional treatment of their patients, although drugs have to be used not only locally, but systematically, at times. In cases where a root has been filled and the patient is threatened with some pain about the root of the tooth, perhaps periostitis, peridontitis, or pericementitis, it is often necessary to prescribe some analgesic. In many of these cases where it is impossible to do anything surgically, a great deal can be done for patients by giving them some medicine; and the analgesics which have proved to be not only safe, but of really great value, are the recent antipyretics that have been discovered. One of them, says the author, which has given him marked success, is antikamnia. It is an antipyretic and analgesic which is safe and very reliable in cases of the kind mentioned, especially as it has no depressing effect on the heart. The average dose is five grains, and four of these doses will relieve and stop pain about the facial nerves. It is also far better than any amount of morphine, and leaves the patient in good condition for the next day. Dr. Briggs has found that in giving morphine, so much of it has to be given in order to overcome the local pain that the patient is saturated with it, and it sometimes takes a week to get over the effect, besides which in the majority of cases the pain has been but indifferently relieved by the drug.—*N. Y. Medical Journal*.

CURRENT THOUGHTS.

THE ORAL EXPRESSIONS OF MALNUTRITION.

By M. L. Rhein, M.D., D.D.S.

[At the recent meeting of the American Dental Association, at Saratoga, Dr. Patterson, the Chairman of the Section on Physiology and Etiology, reported that only two essays of note in his department had appeared in the current literature of the year, the following being one of them. It is reprinted here because many prominent men admitted that it had escaped their notice.—Ed.]

Defective nutrition resulting from imperfect assimilation of food and faulty metabolism is generally termed "malnutrition." Without going into a résumé of the physiological functions of the alimentary tract, it might be well to call your attention to the indispensable role which the mouth plays in the act of digestion. The importance of thorough mastication and consequent insalivation of food as the first act of the chemical transformation of such food into protoplasm is certainly well understood in our specialty. It is very significant that the earliest manifestations resulting from malnutrition are noticed about the pericemental tissues. The careful observations of some of our most distinguished specialists have established this fact beyond dispute.

We look in vain through the general medical literature on this subject to find any reference to this fact, and the important bearing which it has both in the diagnosis and the treatment of disease. It therefore becomes one of those trophies of dentistry that we have achieved in this age of research, that we have been the first to call the attention of the general medical practitioner to the urgent necessity of taking this important observation into consideration—important in two respects:

First. Its value in aiding in the early diagnosis of disease; and,

Second. The necessity of placing the oral cavity in a condition as nearly akin to health and usefulness as is possible, in order that the first act of digestion should be efficiently performed.

Besides the pericemental tissues the other portions of the body which first show manifestations of malnutrition are the skin, the nails, the cornea of the eye, etc.; in fact, those portions of the human economy which are fed by the ultimate terminals of the circulatory system.

In this respect I repeat with the assurance of more recent observations what I stated in "Studies of Pyorrhea Alveolaris,"

published in the *Dental Cosmos* of March, 1888: "The gums and periodental membrane being fed by about the most remote portion of the blood-tracts, it is no more than reasonable to suppose that these organs should be the first to exhibit symptoms of a lack of nourishment in their elemental corpuscles."

Malnutrition does not necessarily imply a state of anemia, although this is often accepted as the meaning of the term; for hypernutrition is as productive of faulty metabolism, if not more so, than the lack of sufficient nourishment.

It being impossible to cover the entire field of this subject, I shall deal mainly with such forms of malnutrition as are associated with the retention or the excessive production of uric acid in the blood.

This subject has been brought to our attention in recent papers by Peirce, Talbot, Kirk, Darby, and others, on the uric-acid diathesis and kindred topics.

The true solution of the uric acid problem is being slowly worked out by the painstaking researches of scientific investigators. While we cannot give positive assent, at the present day, to the results of the investigations of Roberts, Hirschfeld, Ebstein, Horbaczewski, and Levison, yet the consensus of their researches has demolished so many of the old views that until their results have been proven to be erroneous, we must accept their views, hypothetically at least.

Levison, in his recent work on this subject, draws from the latest investigations the following conclusions:

"First. Uric acid is formed in the body by the disintegration of the albuminous substances of its tissues, especially of the nuclein or nucleins.

"Second. The excretion of uric acid becomes increased or diminished by all factors (diseases, medicines, poisons, etc.) which give rise to a more rapid or slower disintegration of the cellular elements of the body, and especially of the leucocytes.

"Third. The taking of food, especially flesh food, causes a temporary leucocytosis (digestive). This leucocytosis probably arises from the nuclein of the food.

"Fourth. The amount of uric acid excreted in twenty-four hours is not influenced to a great extent by food. There is, however, this distinction noticeable; the easily digestible animal albumens set up digestive leucocytosis and formation of uric acid much quicker than the vegetable albumens, which are difficult to digest."

If Horbaczewski's investigations are of any value, they certainly show that uric acid excess is a concomitant, not only of gout, but of various diseases, poisons, drugs, and nervous shocks. They have demonstrated further the falsity of Haig's views in reference to the constant proportion of uric acid to urea, which he gives as about 1 to 33. Horbaczewski has shown by a series of beautiful experiments that the proportions of urea and uric acid are absolutely independent of each other. If we are to give entire adherence to his views, we must accept as a fact that there is a constant proportion in the number of leucocytes or white blood-corpuscles formed, and the amount of uric acid secreted.

This result has been corroborated by the experiments of Hirschfeld, Bohland and Schurz, Stadthagen and others, and also by the noteworthy fact that the production of uric acid is increased in a whole series of diseases characterized by the formation and destruction of a large number of leucocytes.

Maress also disproved the idea of there being any constant relation of the secretion of uric acid to urea, by showing that after a heavy meal the uric acid increases very rapidly, while urea does not begin to increase until later. From this he concludes that urea is a product of the albuminous substances introduced as food, while uric acid is formed from changes in the tissues themselves.

Levison has shown that the increase in the amount of albuminous substance consumed increases in a similar ratio to the amount of urea secreted; while the increase in uric acid bore no relation to the amount of such albuminous substance. These facts must tend to the abolition of the old theory that in health, uric acid is oxidized in the blood into some more soluble substance, and that in other conditions this oxidation is not performed, or, if so, in an imperfect manner.

In a similar way it disposes of the theory so ably presented a few months ago before this society by Dr. Burchard, wherein he says, "A substance—urea—that should be excreted by the kidneys, is replaced by a substance which is not perfectly excreted by the kidneys." I do not wish to intimate that Dr. Burchard still holds these views, for in the same discussion he manifests his familiarity with the latest researches on this subject.

It is impossible, in the time at my disposal, to illustrate fully to you the varying and enormous amount of recent investigations on this subject, which, in fact, is being added to more continuously than any other topic in pathology.

We are reasonably safe, however, in asserting that the uric-acid dyscrasia is due to an excessive amount of uric acid in the blood (or to be more clear, according to Roberts, the quadriurate).

Levison gives two rational explanations for this: "It (uric acid) must either be formed so abundantly that some is stored up in the blood, although the normal quantity is still excreted; or the production of uric acid being normal, or even diminished, an abnormal quantity is retained in the blood. In other words, the disease must be caused by a functional irregularity of the kidneys."

Either or both of these conditions can be present. When the kidneys are so affected by disease that they cannot perform their normal function of more or less thoroughly excreting the uric acid, there results what is known as gout and its kindred affections.

The fact of uric acid being retained in the system on account of the inability of the unhealthy kidneys to excrete the same, has no relevancy to the amount of uric acid produced in the blood. This condition will be found where there is a diminished production, as well as an over-production of the uric acid in the blood. On the other hand, all the baneful effects arising from overproduction of uric acid may be present, but as long as the kidneys are able to perform their normal functions no gouty symptoms are liable to supervene.

Levison cites numerous writers, such as Bartels, Camerer, Laache, Bohland and Schurz, Stadthagen, and others, to corroborate his statement that leucemia may be named as a typical example of a disease accompanied by a constant excessive production of uric acid without usually being associated with gout.

Great importance is attached to this point in our field of work, in order to dispel the illusion that in persons affected with pyorrhea alveolaris, or erosion, where the trouble appears to be due to an increased amount of uric acid in the blood, it necessarily follows that the patient has gout. He may just as likely be suffering from tuberculosis, pneumonia, Bright's disease, neurasthenia, or perchance be under the toxic effect of some powerful drug.

In accordance with the results demonstrated by these investigators, and from clinical observation of various cases of pyorrhea complex, both in private and hospital observation, I advocated at the meeting of the American Dental Association, at Old Point

Comfort, in August, 1894, an etiological classification of pyorrhea alveolaris, by prefixing an adjective stating the name of the disease which is causing the pathological symptoms in the oral cavity, as "rheumatic pyorrhea," "lead pyorrhea,"* etc.

There seems to be little question but that excessive quantities of uric acid in the blood are concomitant with an imperfect supply of protoplasmic corpuscles, though it has not been settled whether impaired nutrition is always accompanied with this increased amount of uric acid in the blood.

Another point that has been clearly demonstrated by these late researches on the baneful effects of retained uric acid, in contradistinction to increased production of uric acid, is the small value to be placed upon the urinal examination of such cases. The results are bound to be negative as long as the kidneys are improperly performing their functions. In such cases, in order to obtain a positively accurate knowledge of the condition of affairs, it is necessary to make a proper test of the blood to discover the relative proportion of uric acid there present. This is a very difficult matter, as it requires a larger amount of blood than it is generally possible to obtain for such a purpose.

These same authorities have shown that whatever tends to lessen the alkalinity of the blood, favors the deposition of the uric acid, in the form of urates. In all such cases there is a consequent hyper-acidity of the system, which is possibly the primary cause of erosion, as has been so ably expounded years ago by Kirk and Darby. Whether we agree or not with the very plausible theory of Ebstein that before the deposit of uric acid in the shape of urates, a necrosis of the tissue with an acid reaction has set in, we are familiar with the fact that in pyorrhea alveolaris there is a scarcity of the elemental corpuscles in the terminal capillaries, and a strong tendency toward a stagnation of these vascular currents.

Following along the line of Ebstein's theory, we can readily believe that on account of this deficiency of elemental corpuscles in the pericemental tissues, a necrotic area is set up; a hyper-acidity of the system being present at the same time, it follows that there is a strong tendency for the uric acid in the circulation to be deposited in this acid necrotic area.

This view is certainly in accord with the results of recent investigations, and it can also be said that treatment carried out on

* Professor W. D. Miller, in his text-book on conservative dentistry just published in Berlin, gives practical assent to this classification by giving a long list of nutritional disturbances as the pre-disposing causes of pyorrhea.

the basis of this reasoning has been very successful in its results. We can likewise suppose that in those cases of erosion unaccompanied by any pyorrheal condition, the ultimate capillaries continue to obtain a sufficient supply of elemental corpuscles to nourish the pericemental tissues and prevent any retrogressive metamorphosis, which is always the commencement of necrosis.

Whether these theories of the beginning of pyorrhea complex or of erosion will continue to be held precisely on these lines is not of so much practical importance to the dentist, as is the knowledge that this condition of affairs is merely a symptom of functional disturbance. It is consequently of primary importance that the real disease should be carefully diagnosticated before the treatment of the oral symptoms can progress on any rational line. In this respect the medical adviser should coöperate with the dentist. The fact of discovering a retention or over-production of uric acid in the blood should be merely the commencement of a differential diagnosis, as it is not sufficient to prescribe a uric acid diluent, in order to aid in its excretion and render its passage through the kidneys more easy, although this treatment is generally of marked benefit to the patient.

It is, however, of the utmost importance to discover, if possible, whether the kidneys themselves are in a condition of health, or whether some functional disease of these organs exists. If the kidneys are found to be healthy, so that their ability to excrete uric acid is unimpaired, the question of there being present any phase of gout or kindred diseases is at once set aside.

A large class of cases of pyorrhea alveolaris present themselves to us, where on account of the excessive brain activity there is bound to result a similar excessive disintegration of the nucleins, and a consequent overproduction of uric acid. When we get, as we commonly do in these cases, a dearth of elemental corpuscles, a condition of pyorrhea complex results, accompanied by deposits of the urates, because, although the kidneys are able, and do excrete quantities of uric acid, the overproduction of the uric acid becomes so great that the urates are very easily deposited in any favoring locality. These are the cases in which, upon urinal examinations being made, an excessive amount of uric acid is generally found. These represent also the cases which are very much improved by rest, travel, and change from the ordinary wearing occupations of life.

If, however, the kidneys are unable to perform their natural functions in excreting uric acid, a much more serious condition of

affairs is presented to us. It is possible, where the disease has not progressed too far, to bring about an improved functional condition of these organs so that they will again excrete uric acid.

As in such cases urinal examinations before treatment will show no uric acid to any extent, and as up to the present time the blood examinations are very impracticable, it often becomes necessary to try the effect of remedies which will aid not only in tending to dilute the urine, but which will assist the kidneys in excreting the uric acid. Frequently the results of urinal examinations after treatment of this kind has been in progress for some time, will show so large an increase in uric acid that there is left very little doubt that the patient was suffering from a retention of uric acid.

TREATMENT.

In treating the various forms of pyorrhea complex accompanied with overproduction or retention of uric acid, we should use every means at our disposal to discover the manner in which our patients live, in order to determine what existing factors favor an overproduction of uric acid. Advice tending to diminish the disintegration of tissue, and consequently the overproduction of uric acid, given to the patient in the proper manner, is of more real benefit than drugs or local treatment. It is unnecessary to dilate upon the necessity of less mental strain, and the refraining from over-indulgence in toxic drugs.

In this respect great benefit is often obtained by attention being given to general hygiene. While moderate exercise is beneficial, an excessive amount of it tends strongly to overproduction of uric acid, and should be carefully avoided.

In order to diminish the possibility of kidney-diseases, the skin should be stimulated and hardened against changes of temperature. For this purpose, warm baths, followed by cold douches or sponging, with sufficient friction or massage, are very advisable.

All the old views on the question of diet in the uric-acid dyscrasia are set aside by these recent investigations. A reasonably mixed diet is much more to be commended than one in which there is a possibility of the tissues suffering from the lack of some required sustenance. Overfeeding is very detrimental, as it is largely productive of uric acid. On the other hand, it has been demonstrated that the acidity of the system is very much increased by fasting, consequently the advisability of not allowing

too long an interval to elapse between meals. The old-fashioned idea of taking no food between eight o'clock in the evening and the following morning's breakfast is remarkably productive of hyperacidity during the night, and may account to some extent for the increased ravages of erosion during the hours of sleep. No more fitting time for the introduction of some food into the stomach can be found than immediately preceding rest. Hence the advisability of a light meal before retiring.

It is unnecessary to mention the ill effect of such drugs as alcohol in the excessive production of uric acid, and the over-indulgence by the patient in any favored article of food which has a tendency in this direction.

Where mental over-exertion is the cause, too great stress cannot be placed upon the benefit resulting from sound sleep, which must be obtained at all hazards.

Outside of these general directions for the manner of living, the remainder of the treatment of such cases, from a constitutional standpoint, should be left to the medical adviser, though mention might be made of the valuable results frequently obtained from the proper use of sedatives.

It is not my purport to enter into any detailed description of local treatment. Each case must be carefully considered, and treated in accordance with the conditions and symptoms presented, and cannot be used as a proper indication for the treatment of a subsequent case.

It might be well to lay down a few general principles for the local treatment of pyorrhea alveolaris:

Make a careful diagnosis of the condition of the pulp of each tooth in the infected territory.

In case of the death of any pulp or the approach to such devitalization, the first step is the cleansing, sterilizing, and proper sealing of the root-canals.

The next step is the thorough removal of all deposits from every portion of the roots; and it is not my intention to discuss the details of this most important phase of local treatment, nor the various forms of medication required to remove the necrotic zone of tissue and produce new and healthy granulation.

Loosened teeth must be held in a firm position, in order to obtain beneficial results.

Missing teeth must be replaced by artificial substitutes, introduced so as to produce the least possible irritation upon the soft tissues.

It is of great importance that the occlusion of all the teeth should be as nearly correct as possible.

And lastly, the most thorough directions should be given to the patient in regard to the local hygienic care of the teeth and the mouth generally. This should not only apply to the keeping of the teeth and gums free from the inroads of microorganisms, but attention must also be given to keeping the tongue and the pharynx in the same sanitary state.

With this object in view, frequent use of sterilizing sprays cannot be too strongly advocated, and in cases of fissures of the tongue, the patient should be instructed to use a tongue-brush moistened in a suitable sterilizing fluid.

The practical object of this paper is to emphasize the fact that the uric-acid dyscrasia can be associated with almost any disease accompanied by malnutrition; and in order to show the wide range of pathological conditions which are liable to produce pyorrhea alveolaris, I append some excerpts from my case-book. Before detailing some notes from these selected cases, it might be well to say that careful clinical observation has demonstrated to me the fact that according to the character of the primal cause, the appearance of the inflamed gums and the character of the deposits and exudations will vary greatly, as well as the symptoms expressed by the patient. My observations on these variations are not so thorough that I can at present classify them according to their individual diseases, but I wish to have recorded the statement that the physical condition of the peridental tissues can become a great aid in differential diagnosis.—*Cosmos*.

GOUTY PAROTITIS.

A curious case of this disease comes to us from across the Atlantic. A gentleman in Paris was attacked with violent inflammation of the right parotid gland. It became red, hot and swollen. In a few days the glands became flabby and the gentleman was seized with a violent attack of gout in the left knee. Then the left parotid became hot, swollen and red, and a few days after the right knee was attacked with gout. After he got well he complained of a salty taste in his mouth before each meal. Upon pressure of the parotids, which were then normal, this same salty taste was excited, and examination of the fluid from the parotid proved that this salty taste was due to the presence, in large quantities, of urates in the saliva.—*Dr. W. R. Meek, Stom. Gazette*.

SALUBROL, A SUBSTITUTE FOR IODOFORM.

By Paul de Terra, Dentist, Zurich, Switzerland.

Salubrol is an extremely fine powder of a light (sulphur) yellow tint, which in taste and smell suggests the pharmacy; it is insoluble in ether and in water, but easily soluble in alcohol and chloroform. In water, and especially in glycerine, salubrol remains intimately suspended for a long time, so that it is very well adapted for injections and pastes. In addition to being free from offensive odor, salubrol has the still more important advantage over iodoform that it is not poisonous. This fact has been demonstrated by repeated tests made with animals, and in the different hospitals and dermatological clinics of Germany and Switzerland, by its use in the private practice of many specialists, and by the very conscientious experiments of Dr. Silber, in Breslau. Moreover, when we consider the chemical composition of salubrol, it is obvious that a toxic effect on the part of this drug would seem to be precluded, for bromine, in contrast to iodine, is not poisonous in any of its compounds, and has therefore found very extended use as a therapeutic agent; and, although it cannot be denied that its continuous use for any great length of time seems undesirable by reason of bromine exanthema, nevertheless this incidental ill-effect is not to be compared with the serious and frequently alarming toxic phenomena which, as already mentioned, are liable to manifest themselves after the most moderate applications of iodoform.

For practical use I have prepared salubrol in the following forms: As a paste of salubrol and arsenic, as a paste of salubrol and glycerine, and as a solution in alcohol, and also in chloroform. For purposes of injection I always prepare fresh liquid (aqua dest., 50; salubrol, 5;) by mixing the powder with a little water in a porcelain mortar, and then adding what water remains.

The paste of salubrol and arsenic (ac. arsen., 3; salubrol, cocaine, aa 1; ac. carbol., q. s. ut fiat pasta spissa) I consider very effective.

The paste of salubrol and glycerine is made by mixing the powder thoroughly with glycerine in a mortar, without further additions. I consider even the admixture of oxide of zinc for the capping of pulps as purposeless; the paste can be given more or less consistency as desired by the appropriate additions of salubrol powder. This paste keeps excellently in a closed glass; only

it is necessary to stir it daily, as the salubrol in time rises to the surface. We see, therefore, that salubrol paste has the advantage over iodoform paste that it does not, like the latter, require further additions of the powder, which impair the action of the preparation—*e.g.*, of the caolin or oxide of zinc used as a vehicle. The thick paste of salubrol always remains soft, and is, therefore, specially adapted to the capping of pulps and the filling of root-canals. In the case of decapitated pulps the necessary quantity of paste may be fixed on the desired spot with ease and certainty, and will remain there even if it should come in contact with saliva, as the preparation has no affinity for water. That salubrol remains permanently soft is obviously also an advantage as compared with the so-called cement pastes, for these last never serve the purposes of an antiseptic covering. Just because they gradually harden, they lose all antiseptic power. Only a covering that will remain at all times soft or even fluid is capable of protecting the pulp tissues or the remains of the pulp itself from further decay, and thus of acting permanently as an antiseptic mass.

The solutions of salubrol in alcohol and chloroform (saturated, and, so far as possible, always freshly prepared) serve chiefly to cleanse and dry the cavity before the salubrol paste is introduced. They are greatly superior to solutions of carbolic acid in that they have no eroding effect upon the adjoining mucous membranes. For this reason it is possible literally to flood a cavity with the alcoholic solution, or a root-canal with the chloroform solution, without having to apprehend any danger to the soft parts of the mouth, even if the patient should swallow some of the fluid. I prefer to use the solution of salubrol in chloroform for root-canals, both because chloroform will dissolve a larger quantity of the powder, and also because by the more rapid evaporation of this solvent (which may be promoted by blowing in warm air) the salubrol remains finely and evenly distributed on the walls of the canal.

My procedure in filling canals with the aid of salubrol is very simple. After having made a funnel-shaped enlargement of the orifice of the canal, I first apply, in gangrenous or putrid cases, a small piece of caustic potash, and push them up gradually with a fine canal-probe as far as the apical foramen. When the contents of the canal have been saponified, the entire canal is cleansed by means of a Pravaz syringe and subsequent thorough irrigation with lukewarm water; then with a flexible canal-drill, and without exerting any pressure, I enlarge the entire canal as far as the fora-

men, and in some cases even perforate the latter when there is suppuration or necrosis at the apex of the root. The canal is best dried by means of the chloroform solution of salubrol, introduced repeatedly on closely rolled spirals of cotton. After this the paste of salubrol and glycerine is gradually pumped in, until the canal is full. The cavity is then closed with pink gutta-percha, and is left for several days, in some cases even longer, to give time for any reaction that may set in. Not until then is the final process of filling undertaken, in which the lower third of the canal is always left filled with as thick a paste of salubrol and glycerine as may be. The rest of the canal is then finished with Hill's stopping, or covered with a metal cap if the case is one for crown- and bridge-work. This metal cap, which is intended to receive the corresponding metal pin, is to be fastened down with phosphate cement, without allowing the cement to displace the salubrol paste, the latter, of course, being destined exclusively to close the apical foramen.—*International*.

EXCISION OF THE INFERIOR DENTAL NERVE.

The excision of the inferior dental nerve in severe neuralgia of the lower jaw, or tic doloieux, is the most important operation devised for the cure of this trouble. The principal feature is perfect simplicity, differing entirely from all the other operations. Dr. Brophy opens to the mental foramen, inserts a large flexible drill, Gates pattern, as far as the inferior dental foramen, and twists off and removes the nerve and blood-vessels connected with it.

An interesting feature developed by this operation is that Drs. Brophy, Black and Harlan maintain that the inferior dental nerve and blood-vessels of the inferior dental canal are not necessary to maintain sensibility nor blood circulation in the pulp and tooth. In other words, that the collateral circulation is quite ample to maintain complete vitality of the pulp and tooth. Dr. Brophy even states that there is no nervous filament passing from the inferior dental nerve, so-called, or any of its branches, into the apices of the teeth, and that, therefore, this inferior dental nerve is not a nerve at all, and should not be known by that name. This phase of the subject is one that should receive more attention, and possibly would lead to the solution of the much-discussed question of tooth vitality.—*Dr. W. R. Meek, Stom. Gazette*.

CONDUCTIVITY OF PYROZONE.

By Dr. J. Morgan Howe.

Mr. President, at the last meeting of the Institute, Dr. Van Woert made some remarks which seemed to me so incorrect and misleading that I should have replied to them at the time, but for the fact that the meeting was overcrowded with material, and I did not wish to take up the time that had been allotted to others. With your permission I will call attention to them now, and test the reliability of some of the statements. In regard to two substances, guaiacol and pyrozone—five-per-cent. and twenty-five-per-cent. solutions—he said they are “absolute non-conductors” of the electric current. I doubt it very much. I think there is no such thing as an absolute non-conductor; even those substances which are regarded as insulators have their resistivity recorded and tabulated; hard rubber and porcelain stand, I believe, at the head of the list as affording the greatest resistance; I do not know about liquids excepting water; its specific resistance is recorded. But on this point I wish to object to the use of the words “absolute non-conductor” as misleading. Then, speaking of bleaching with pyrozone, he said that “upon careful experiment you will find that pyrozone solutions, either five per cent. or twenty-five per-cent., are absolute non-conductors, and the addition of the electric fluid does not hasten or facilitate the operation in the least.” I have bleached teeth with a twenty-five-per-cent. solution of pyrozone by the aid of the electric current for over a year, and I have never had such good results without the electric current as I have had with it, and I believe from clinical experience that the electric current has helped very much. Dr. Van Woert said that pyrozone, both five and twenty-five-per-cent. solutions, were “absolute non-conductors,” and I understood that this was his reason for asserting it would not be cataphorically driven into the tooth. I will, with your permission, test it here for us all to see; it was proposed that I test it publicly, and I am very glad to do it. Now, gentlemen, Dr. Allen has poured some twenty-five-per-cent. pyrozone into a wide-mouthed bottle, and I have inserted two German-silver wires through the cork into that solution; they stand in the liquid on opposite sides of the vial; I will just touch the wires that are in the solution with the electrodes; there are five cells connected now. The wires now are in the solution of twenty-five-per-cent. pyrozone, and you see that one milliampère is recorded by the milliampère meter. If the wires were larger,

or if they were nearer together, or if they were inserted farther into the liquid, or if more cells were connected, in either case it would record more—more current would pass. Now, another statement that was made was, “the conductivity of plain water with a pressure of thirty-one and one-half volts is just one-tenth of a millimetre to the half-drachm—that is to say, when thirty-one and one-half volts are running through half a drachm of water, the milliampère needle will show one-tenth of a milliampère.” Now I don’t know what Dr. Van Woert meant by plain water; I find that distilled water offers much greater resistance than tap water does; the reason, of course, we may suppose is that the chlorides, nitrides, etc., dissolved in our ordinary croton increase its conductivity. Distilled water has a very high resistance, but Dr. Van Woert said *plain water*, and which of the two he meant I do not know, but he said there would be *so much current* running through a *certain amount* of water. That is, I think, misleading, because the quantity of water that surrounds the electrodes does not at all influence the passage of the current; it depends upon the size of the electrodes, the distance that they are apart, and the extent of surface that is immersed in the liquid. That is easily shown. We will take this bottle of distilled water that I have here, and put this cork with these wires in its opposite sides into it. On touching the electrodes to the wires we have two milliampères recorded, as you can see, the current passing through the distilled water. Now I will put the wires in the cork into tap water, and you will see the difference between the distilled water and the tap water. Please note where the needle stands; as I wanted to show that the amount of current does not depend on the amount of water, I put them now into this glass of water; you see that they are in about ten times as much water as before; the needle stands just the same, because the wire stands in just the same relation and are inserted to the same depth. The two electrodes might be in the river, and the current would be the same that it is in this glass, if their relations were the same and it were the same water. The points I wanted to call attention to are the use of the words “absolute non-conductor,” the positive statement that the current would not pass through the solutions of pyrozone, and the idea conveyed that the amount of liquid influenced the current. I might have shown as to the pyrozone that the three-per-cent. watery solution of pyrozone conducts about twice as well as distilled water, so that it appears that the peroxide of hydrogen increases the conductivity of water very much.—*International*.

AMENORRHEA FROM ANTRAL ABCESS.

A case of unusual interest is reported by Dr. Russell H. Cool. A woman suffering for over three years with almost constant neuralgic pains, and with paroxysmal exacerbations extending the entire side of the face and head, presented herself, and upon examination of the mouth, the dental organs appeared healthy, the only carious tooth being an inferior molar, which was thoroughly examined and found to be properly filled. The buccal surface of the gum had the appearance of health. Upon examination of the interproximal spaces, a wire probe was inserted between the bicuspid, upon the right side, and disclosed a carious condition of the alveolar process. Under gentle pressure the probe passed through the floor of the antrum, and upon the withdrawal of the probe a discharge of purulent pus followed. The patient immediately felt relief from pain. A subsequent operation for treatment of antral suppuration caused entire relief, not only of the neuralgic affection, but also of a nasal catarrh from which she had been suffering. As it afterward transpired she had also been suffering from menstrual irregularities, and at this time the menses were many days overdue. Strange as it may appear, upon the relief of the abscess, the menstrual flow reappeared, and has been regular ever since, much to her comfort and happiness.—*Dr. W. R. Meek, Stom. Gazette.*

ANTRAL SARCOMA.

By R. H. M. Dawbarn, M.D.

This case presented the following history: About a year ago or a trifle less a young gentleman, aged twenty-five, had trouble with the second bicuspid of his upper jaw, which ached for a considerable time and ultimately was drawn by a dentist in the town where he lived, not far from New York. On close questioning, the patient remembered, when he finally came to me, a very interesting point—namely, that he had noticed that the end of the fang of the extracted tooth was soft instead of being of the usual petrous character. The dentist had commented on this as being odd, but nothing was thought about the matter. The discomfort continued—not suffering, simply a feeling of discomfort there. Because of that feeling of discomfort, and because of a slight fullness in the roof of the mouth that he had noticed in the last two or three months, he went to Dr. Howe, who felt sure

there was a serious condition. I think he was of opinion that there was a tumor; and he sent him to me. I must say that when the young man presented himself to me there was little wrong to be observed. He was a rather full-faced individual, and such slight prominence above the alveolus as existed was not noticeable except on comparing the two sides. The roof of the mouth on that side was a trifle swollen in appearance. He had no cachexia, such as one frequently sees in the late stages of malignant disease. I made my diagnosis, as I have repeatedly done, partly by aid of a hypodermic needle. I ran the hypodermic needle into what should be solid bone, and it went straight through. I propose, if you will permit me, to demonstrate this with a pin. Now, it is self-evident to any of us that there should here be the densest kind of dense bone; but in this case the pin goes straight through, you see, and meets only about the resistance of ordinary cartilage; you see how little there is to show for it—a little swelling here in the roof of the mouth and again above the alveolus, over the antrum of Highmore, just behind the canine fossa. Thus far I had not made the diagnosis more than a presumptive one, as this softening might have been due, for instance, to osteoporosis accompanying an inflammatory condition there; but if there had been such a degree of osteitis with softening, there would probably have been a previous clinical evidence of it, such as suppuration, an ulcerated root, or some other evidence of inflammatory bone lesion; and there was nothing of that kind. Then, too, if it had been merely a superficial softening from chronic inflammation of bone over the antrum, when the needle was pushed in through this very thin shell of bone, I should have been able to move it with perfect ease; but instead of entering an air-space it was being pushed for the whole length of the needle into a solid mass; so it was evident that there was a large tumor there. Now, as to the variety of tumor, that was another matter. It might be a sarcoma, of several varieties; it might be odontoma, one of some half a dozen kinds; it might be a fibroma, an enchondroma, etc. As to odontoma, one small point is worth observing—namely, that this man had a complete set of teeth, with none missing, except the one recently extracted. Now, in odontoma one regularly expects to miss a tooth; and pretty commonly the growth has developed from this tooth follicle as a starting-point.

In order to make sure of the nature of the tumor, I cut from it a small piece, say, a centimetre long and a half centimetre in width, and sent it to a prominent pathologist, Dr. Ely, the Pres-

ident of the Pathological Society. He said it was a small spindle-celled sarcoma, and of an unusually malignant type. It was probably an epulis in origin, springing from the socket of the tooth that was extracted, and involving and softening the fang of that tooth, a miscropic examination of which would have enabled an early diagnosis to be reached. The growth filled the antrum simply because this happened to be the direction of least resistance. Now, of course, it became a matter for prompt operation. I determined to give him every chance I could of not having a recurrence; therefore I not only excised the entire upper jaw, but also completely excised the external carotid arteries on both sides, first tying in each instance all of its eight branches. Thereby the region formerly occupied by the growth becomes comparatively starved in blood-supply; and the fact seems of value in preventing return of the malignant growth.

The patient did well, and is now attending to his law practice, wearing a prosthetic appliance made by a member of this Institute.—*International*.

COCAINE.

By Samuel A. Hopkins, M.D., Boston, Mass.

Ever since the discovery of anæsthesia the idea of a local anæsthetic has taken firm hold of the professional mind, and no amount of failure has been able to shake our belief that some day or other the ideal local anæsthetic will be forthcoming. It must be safe, it must be easy to administer, and it must be quick in its effect.

We need a safe local anæsthetic. There is perhaps no greater need in modern surgery and dentistry. The mental anguish, as well as the actual suffering entailed by our daily operations is appalling. It makes the profession of dentistry the most trying and exhausting one known. The pain which we are obliged to give is not only injurious to the health of the patients, but it limits our usefulness, and even affects the estimation in which our profession is held by the community at large. So much, therefore, is to be gained by the use of a local anæsthetic that the temptation is very great to try everything that may promise an alleviation of pain, and we are loath to give up anything that seems even in a moderate degree to give that alleviation, although its use may be attended by grave risks. Indeed, we sometimes deceive ourselves, so great is the desire to save pain, and are almost persuaded that any risk is justifiable to gain such an end.

This, I am afraid, has been the history of the use of cocaine in the dental profession. It is a sufficient comment on its doubtful efficacy in dentistry, that after so many years of experimentation it should still be necessary to publish articles in our dental journals describing its use and its limitations, and the fact that you are willing to listen to me to-night indicates that grave doubts still exist in your minds as to its unrestricted use in dentistry being justifiable.

In order to get at the facts concerning the use of this drug, I have gone over very carefully a very large amount of literature on the subject, and have looked up some of the records of the cases where serious results are reported. I am indebted for valuable information to Dr. T. W. Hays, who, in March, 1894, before the Cincinnati Academy of Medicine, read a most interesting paper on the physiological action of cocaine, citing numerous authorities.

The symptoms of cocaine-poisoning differ materially in different individuals, and there is probably a disposition or diathesis existing in some individuals which renders them exceedingly susceptible to the drug. Great difference exists in regard to the time it takes for poisoning effects to appear. This may vary from thirty seconds to three hours, and the time necessary for recovery also varies greatly. Sometimes recovery is almost immediate, and, on the other hand, it may take months, and then leave the patient in a very anæmic condition. The sex, age or condition of the patient does not seem to have any particular influence on the effect. Strong or weak, young or old, all may be quickly affected. Neither are habitual users of the drug, those who have formed the cocaine habit, entirely free from the dangers of acute poisoning.

The size of the dose and the method of its administration do not seem to control the effect. This is, however, seemingly a peculiar susceptibility when the drug is applied or injected in the vicinity of the fifth nerve or its branches. Woffler, who favors the use of cocaine, states that in most of the cases that have come under his observation where serious or fatal results have followed its use, the injections were made in some part of the head. He claims that a five-per-cent. solution may be used with impunity in other parts of the body, but a solution of not greater strength than two per cent. can safely be used in the region of the head.

In a general way, the symptoms of cocaine poisoning may be briefly described as follows: There is an excitation of the

mind, and associated with it an expression of anxiety which may amount to a fear of approaching death. A feeling of warmth steals over the patient, which may be followed by a chill. The respiration becomes fearfully rapid, and later becomes labored. The pulse-beat increases to a very marked degree, and the pulse runs up to 150, or even higher. Respiration becomes more difficult, and the heart grows weak, while the mental disturbance is increased so that ideas do not follow each other in proper sequence. If the drug has been administered in the mouth, the tongue becomes numb and speech is affected; not, however, to such a marked degree as might be expected. If the poisonous effects continue, there seems to be more genral anæsthsia, and the organs so affected have a decided feeling of cold. Sometimes an irritation along the spine or back of the neck, a tickling or itching sensation, is present. The hands are closed in a convulsive manner; the fingers, legs and arms become stiff and tetanic. The muscles of the face partake of the convulsive movements, and the expression is agonizing to the last degree. In some cases death occurs while in this tetanic condition. Sometimes, however, instead of the convulsive symptoms complete relaxation takes place. If recovery occurs, severe nervous disturbances may remain for an indefinite time.

The symptoms I have described as belonging to cocaine poisoning are subject to wide variation. Indeed, no two cases seem to give exactly the same train of symptoms. In going over the records I have been astonished to find how many cases of poisoning are reported. Mannheim reports five cases of poisoning from the subcutaneous use of the drug, and also nine cases in which it was dropped in the eye; two where it was used in the ear; larnyx, three; mouth, two; gum, two, etc. Four drops of a two-per-cent. solution used by injection produced poisoning in an old lady, who did not recover for four days. Three drops of a three-per-cent. solution was followed in one case by marked restlessness, which disappeared in four days. 0.05 grain in one case and 0.04 grain in another, injected subcutaneously into the eyelid, causing intoxication lasting many hours. Dr. Hays, among other cases, mentions the fact that he himself was poisoned by cocaine injected into the gum. It is but fair to state that the dose was large, but the poisoning was almost instantaneous.

The March number of the *Centralblatt* mentions a fatal case of poisoning following an injection into the urethra. In the October, November and December, 1890, numbers of *Therapeutische Monatsschrift* is given a complete list of the reported cases of poi-

soning up to that date. The percentage of fatal cases is enormous. Of one hundred and seventy-six cases recorded, ten were fatal. Enough has been said of the general poisoning effects to show that the drug is one to be used with great caution. We do not yet know what its dangers may prove, nor have we yet found a physiological antidote. Digitalis, atrophine, the nitrate of amyl, and nitro-glycerine have been suggested, but the efficacy of these drugs is still a matter of doubt.

I found it a much more difficult matter to get any definite reports of serious results following the use of cocaine in dental practice. This was, of course, to be expected, as most of these cases occur in private practice, and cannot be reported without injury to the reputation of the practitioner. Consequently we get only meagre accounts of the unsuccessful cases, or of those cases which are attended by fatal or alarming symptoms. Each successful case is, however, quickly reported, much to the glorification of the operator, and the temptation to follow in his footsteps leads to many an accident.

Appreciating this difficulty, I wrote to a number of leading New York dentists, asking for their experience in the use of the drug. I also asked, "What should be considered the maximum dose for hypodermic injection into the tissues of the mouth?" This last question has never been answered, nor can I answer it myself.

The greatest courtesy was shown me, however, and I received a large number of replies to my letter, but I will not attempt to read them, as I have promised to be brief. A large number of those who so kindly answered my letter, frankly said they were unwilling to risk hypodermic injections in any strength. A few alluded to the alkaloid, isoatropyl-cocaine, and its dangers, and all expressed the feeling that great caution should be used in administering the drug hypodermically. Dr. Delafield, under whom I had the pleasure of studying at the College of Physicians and Surgeons, wrote that he thought it should never be used hypodermically. My own experience seems to bear out this opinion, so far as it relates to injections into the tissues of the mouth.

I have myself had the scare, and although several years have now passed, it sends a cold chill down my back whenever I recall my experience. I shall never forget one case, a man in apparently perfect physical condition, for whom I had to perform an operation upon the gum between the lower first and second molars, which necessitated giving great pain. My syringe was

carefully sterilized, and ten minims of a four-per-cent. solution were taken into the syringe; two minims remained after the operation, and at least two minims were absorbed by the napkins with which I surrounded the parts, so that it is safe to say that the results following were produced with a dose of not over six minims. The gum was relaxed and somewhat torn, and undoubtedly a part of the dose got into the mouth and may have been swallowed. Be that as it may, in about ten minutes there was a seeming excitation of the mind, and all the symptoms which I have previously described soon followed. I was obliged to get my patient into a bed, and send for his physician. By the aid of stimulants—brandy and coffee—the patient gradually recovered, and was able to be driven to his home in three or four hours.

In another case, that of a young woman, the patient left the office in apparently good condition after an operation in which the drug had been used, but complained that while in the car on her way home she experienced difficulty in breathing, with palpitation of the heart, and had to exert all the power of her will to get to her house. She did not recover fully for several days. In this case not over four minims of a four-per-cent. solution were used.

A similar case to the above was that of a vigorous young man, who was a student. He likewise did not feel the effects until on his way to Cambridge; but as he had access to several convenient bar-rooms on his way out, he was able to get sufficient strength to reach his rooms. In this case not over three minims of a four-per-cent. solution were injected, and none escaped into the mouth. While the after-effects of this case were not serious, a terror of similar results was produced that made him willing to submit to the most painful operations rather than have me make use of the drug again.

I have found hundreds of cases of cocaine poisoning reported in various medical journals, both in this country and abroad, and shall be glad to give these references to any one who wishes to investigate this matter further.

Suggestions of new methods for doing away with the danger have appeared from time to time during the past fifteen years, and in the December number of the *Dental Digest* an article from the pen of a careful observer suggests the combination of cocaine with morphine and atropine.

Whether we have any safe or reliable substitute for cocaine in the various combinations that are suggested from time to time

has not yet been determined. There is, however, a substance which deserves more than passing notice on account of the high character and scientific standing of the men who have made the investigations concerning it. Dr. A. P. Chadbourne, of Boston, in 1892, before the British Medical Association, read a valuable paper on an alkaloid which had recently been isolated by Giesel from the leaves of a small-leaved cocoa plant of Java. The chemical constitution and properties of this substance were studied by Liebermann, who proved that it was benzoyl-pseudo-tropein. Chadbourne gave it the name of *tropa cocaine*, and under that name it is now sold by the leading manufacturers of drugs.

In his paper, a careful study of which I would recommend to any one who contemplates using this drug, Dr. Chadbourne relates a series of carefully performed experiments with *tropa cocaine*, using cocaine of equal strength upon the control animals. I cannot, of course, give these experiments in detail, but the conclusions drawn, which were amply supported by the evidence, were as follows:

1. *Tropa cocaine* is less than one-half as toxic as cocaine.
2. The depressing action both on the cardiac motor ganglion and the heart muscle, especially the latter, is much greater with cocaine.
3. Local anæsthesia, both of the eye and of the skin, is much more complete with *tropa cocaine*, and is possibly of longer duration.
4. Solutions of *tropa cocaine* are moderately antiseptic, and retain their strength for at least two or three months, while cocaine solutions begin to deteriorate in as many days.

Experimentation on the human subject confirmed the above conclusions, and seemed to demonstrate that *tropa cocaine* was twice as strong and half as toxic as cocaine. There is, however, one possible source of error in using *tropa cocaine*—viz., the possibility of obtaining an impure sample of the drug. Dr. Chadbourne, in his experiments, procured one sample that was much more toxic than the others; not more toxic than cocaine, however. But after purification by recrystillization the difference disappeared.

It is also rather expensive, and the supply of small-leaved cocoa plants is naturally limited. One other difference might be considered an objection. Cocaine has a contractile action on the small blood-vessels, which tends to arrest hemorrhage; *tropa cocaine* has no such action.

After writing the above, I took the liberty of calling upon Dr. Chadbourne, and asked him if he had seen any reason to modify his views on the subject of the two drugs. He assured me that the experience of those who had made use of tropa cocaine only tended to confirm the conclusions he had drawn from his experiments. In the course of our conversation he gave me an important point in the treatment of cocaine poisoning, which I have not seen referred to elsewhere. He found that with the animals experimented upon a much larger dose of cocaine could be used if the temperature of the room was lowered, and the animal recovered from the toxic effects more quickly when the body temperature was lowered by exposure to cold. This suggests that an ice-pack or exposure to the cold air in winter might give considerable relief in these unfortunate cases of cocaine poisoning. He also confirmed the statement I have already made, that an injection in any part of the head is more liable to be attended by toxic symptoms than in any other parts of the body.

I do not wish to be understood as advocating the hypodermic injection of this new drug into the gum for the extraction of teeth, or other operations. I merely wish to affirm that if a local anæsthetic is to be used in this way that there is some scientific basis for experimentation with tropa cocaine, and it will probably be found much more effective and a thousand times safer than any of the nostrums that are offered to the public as substitutes for cocaine.

One other method of local anæsthesia I must refer to, as it is now before the public, supported by men of recognized skill and intelligence—namely, the use of the electric current in connection with cocaine and guaiacol, or cocaine alone. For a more detailed account I would refer you to Dr. W. J. Morton's article in the January number of the *Dental Cosmos*, to Dr. Gillett's article in the February number of the *International Dental Journal*, and to other more recent articles, which will repay careful study.

I have seen cocaine used by cataphoresis a sufficient number of times to convince me that it has a place in dental practice, and I mean to use this method for obtunding sensitive dentine in extreme cases. It is, however, too cumbersome to be used as a routine method. There is usually more or less pain, sometimes a good deal of nervous apprehension attending its use, and in some cases it fails to make any appreciable difference in the sensitiveness of the tooth. This may be due to faulty manipulation. The dam should always be in place when this method is applied, as I am not convinced that cocaine used in this way is less poison-

ous than when used in the ordinary manner. Two possible improvements have suggested themselves to me—one would be to have the obtunding done by an assistant, and thus save fifteen minutes of your valuable time, for the loss of time is a serious objection to this process; and the other would be the substitution of tropa cocaine.

The suggestion has recently been made that the incisors may be rendered insensible to the touch of the instrument by placing pellets of cotton saturated with a ten-per-cent. solution of cocaine in the nostrils. I have seen this tried with entire satisfaction, but I hesitate to endorse the method from the danger of forming the cocaine habit. Doubtless, you know that snuffing cocaine up the nose is a particularly delightful form of indulging in the cocaine habit, and one that is easily acquired. Singers sometimes acquire the habit by using the drug to dry up the secretions and get temporary relief while singing. Neither the morphine nor the alcohol habit compares with the cocaine habit in the undermining influence on the mind and body. For this reason I should discourage the use of cocaine by this method.

Another method of producing local anæsthesia with cocaine was suggested by Dr. Schleich, of Berlin, who recently published a monograph on the subject. Briefly it consists of an almost infinite number of injections of an almost infinitesimal amount of the drug. The injections are made, not subcutaneously, but intracutaneously, and the technique is somewhat as follows: Beginning always in the healthy skin, and holding the syringe almost parallel with the skin, the needle is introduced, great care being taken not to push it through the skin. The fluid will distend the skin and raise a white, bloodless wheal. This area is instantly anæsthetic. Keeping within this area, you introduce the needle near its edge and produce another oedematous white spot. In this way you can gradually anæsthetize a foot of territory. The anæsthesia lasts about twenty minutes, and infiltration can be repeated if necessary. In dealing with inflamed tissue it is always desirable to encroach upon it gradually from the surrounding healthy tissue. In operations requiring deep incisions the gradual process should be adopted in getting at the seat of the disease.

The strongest solution used contained only two-tenths of one-per-cent. of cocaine, and the weak solution contained only one-hundredth of one-per-cent. of cocaine, with a little salt solution added. Indeed, it is pretty evident that the anæsthesia comes more from pressure on the terminal nerve filaments than

from the drug itself, since it can be shown that a two-tenths-per-cent. salt solution injected in the same way will produce anæsthesia; not, however, without severe irritation. Chemists are prepared to furnish tablets made according to the formula of Schleich, and this is, perhaps, the best form in which to obtain the drug for this method of administration. How general this method will become no one can predict, but I know of the successful removal of a good-sized abdominal tumor, several operations for varicocele, the opening of a felon, and a lot of minor operations. The mouth hardly offers the best field for the practice of this method, but in a general way it is not without interest.

I cannot close this paper without a reference to the wholesale extraction of teeth by ignorant or unprincipled practitioners, who advertise the painless extraction of teeth by the use of so-called obtundents. For several years past we have been receiving from time to time in our mails, advertisements of obtundents which are to be used by injection. In almost every instance the advertiser claims that no cocaine is used, and tempting offers of exclusive territory and dazzling riches to follow the use of this particular preparation are held out to the unwary. By reference to an article in the May (1893) number of the *Dental Cosmos*, it will be seen that nearly all of these preparations contain a large percentage of cocaine. This article is by Dr. Edward C. Kirk, of Philadelphia, who had a number of these so-called local anæsthetics chemically examined in the Philadelphia College of Pharmacy. There were ten different preparations, all of which had been widely advertised, and in almost every case the impression had been given, if it had not been positively stated, that the preparation contained no cocaine. It was found on analysis that every one of the preparations, with the exception of Barr's, which was merely an alcoholic solution of peppermint and cloves, contained cocaine, and many of them in such large amounts as to be dangerous even in small doses.

Unfortunately, the use of these preparations seems to be increasing. Of course, no self-respecting man could be guilty of violating the code of ethics of his profession by manufacturing and advertising such nostrums. It is well understood that the profession has a right to any discovery or improvement that may be made by one of its members, and each man in the profession is under distinct obligation to give to the profession any knowledge that he may have acquired that will benefit his fellow-practitioners.

It seems to me that it is equally a violation of the code to use

and recommend any nostrums that may be put upon the market. In this particular case there is an additional reason for taking a high stand, as a disguised danger is more to be dreaded than an open one. It would be well if we could bring about such legislation as would make it a criminal offense to deceive the public by flooding the market with such nostrums, but I am not sanguine about our power to institute reforms by legislative action. We have to combat not only the inertia of political bodies, but the opposition of uneducated and unprincipled practitioners as well. Every peripatetic tooth-puller eagerly avails himself of these preparations, reckless of the danger, and while it would be a great gain to humanity to exterminate this species of dental practitioner, I can see only one way to accomplish it, and that is by a crusade of education and the creation of a higher and better public opinion.

It is the duty of every man in the profession to use his influence in warning the public against these fearful traps laid for the unwary. Every means in our power should be used to expose the charlatans who, for a fee, are willing to subject a patient to any risk, and who are doing irreparable injury by the wholesale extraction of valuable teeth. We must check this evil if we wish to uphold the dignity of our profession and preserve our self-respect. How we can handle this problem best it is difficult to know; but with high ideals and a high appreciation of our calling we can carry on an aggressive warfare that will eventually result in the extermination of nostrum manufacturers and irresponsible practitioners.—*International Dental Journal*.

ADMINISTRATION OF COCAINE.—Dr. G. E. Hunt thinks that the "per cent. solution" in cocaine is very largely responsible for the many noticeable ill effects, as few dentists put up their own solutions, and have but hazy notions of the number of grains employed. He suggests, instead of the usual method, that the intended dose be dissolved in an indefinite convenient quantity of water and the entire amount exhibited. This will impress dosage on the operator as no other method will, and has the additional advantage that each solution is fresh, when administered, and therefore is more reliable than if prepared for some time.—*Dental Register*.

HINTS.

No dental society could engage in better work than the popular disseminating of dental knowledge.

Dr. W. F. Lewis, Stom. Gazette.

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With the entire absence of the front teeth it would be almost impossible to emit a pleasant singing tone, as the sound-waves are entirely regulated by the movement of the lips when the teeth are absent.

Dr. Russell H. Cool, Stom. Gazette.

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I have been gratified with results obtained from a preparation called hydrogeal.

Dr. L. Van Orden, Stom. Gazette.

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A most welcome preparation is a formula by Dr. Clyde Payne, and is a boon in cases of sensitive dentine. The obtundent contains carbonate of potassium and glycerine, cocaine and carbolic acid. The theory of its action on dentine is, that the glycerine and carbonate of potassium being antacid, corrects the acid supposed to exist, besides dehydrating tubuli, thus giving the cocaine and carbolic acid an opportunity to enter and obtund the sensitive condition. It should be used warm and forced in with a hot-air syringe.

Dr. W. F. Lewis, Stom. Gazette.

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The common canker sore is of great annoyance to the patient and the operator. I think it causes as much suffering as an exposed pulp. Resorcin, in crystals, touched to these, will act as a specific.

Dr. R. H. Cool, Stom. Gazette.

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Lactic acid is one of the most effective agents in the treatment of pyorrhea alveolaris in the removal of the calcareous deposit upon the roots of the teeth, as it readily dissolves the tartar, which, by long contact, has become so hard as to resist the force of such instruments as can be used well up under the gum or near the apex of the root. It can also be used with impunity upon soft tissues, especially where active inflammation exists. Ordinary soda will be found an antidote should its caustic properties be too great upon healthy tissue.

Dr. W. F. Lewis, Stom. Gazette.

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The preparation with which I have had some success as an obtundent is composed of equal parts of cocaine and thymol,

made by heating the two in a test-tube, the thymol being melted, and this in turn dissolved the cocaine; or it may be made by grinding the two together, a thick syrupy fluid being the result. For sensitive dentine, I use it by placing a piece of asbestos paper saturated with it in the cavity and over as broad a surface as possible, covering this with zinc phosphate, and allowing it to remain two or three days or more.

Dr. S. H. McNaughton, International Dental Journal.

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Dentists, like physicians, often use remedies the action of which they have no positive assurance. Our absolute knowledge is very limited regarding the remedial action or curative properties of medicinal agents. We get, or rather suppose we get, certain results from the use of certain medicaments, but as to just how we get them or how a cure of diseased conditions is effected, we cannot accurately demonstrate.

Dr. W. F. Lewis, Stom. Gazette.

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Salol, while not possessing properties that make it a dental medicament, is very useful when combined with paraffine as a root-filling. It is nearly insoluble in water, but readily soluble in chloroform and in volatile oils. It is created from salicylic acid, phosphorus or phosphorus oxychloride. It is the vehicle for retaining the integrity of the paraffine as a root-filling. Take equal parts of salol and paraffine, first dissolve the salol and then add the paraffine melted.

Dr. W. F. Lewis, Stom. Gazette.

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My theory for several years has been, in reference to obtunding sensitive dentine, that the best method is to have clean, sharp burs, steady hands, an engine revolving at a moderate rate of speed, but running steadily, telling the patient you are going to hurt him a little, and then doing the work deftly and quickly. Up to the present time I have not found anything that I would trade off for my sharp, up-to-date instruments, deftly handled.

Dr. Osmun, International Dental Journal.

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I had a very queer experience in the use of cataphoresis on a lady, a woman weighing two hundred pounds. The peculiar part of it was the effect on her fingers. She wore rings and could not get them off, she was so fat; a few days after the operation she came back to me with blisters on her fingers under the rings.

Dr. Adelberg, International Dental Journal.

It must be borne in mind that the most sensitive cavities with which we have to deal are those at or near the margin of the gum, or along the line of demarcation between the enamel and the dentine. When that line shall have been passed, the sensitiveness in any given tooth diminishes. The most difficult cavities to excavate, and those most in need of obtundents, are those between the teeth, and this is where cataphoresis is always difficult to apply, and most ineffective, if applied, so that it has been impossible for the writer to utilize it to advantage in this class of cases, excepting in readily accessible cavities in incisor teeth.

Dr. E. A. Bogue, International Dental Journal.

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I had a case where there were blisters raised under the rings where the negative electrode was held in the hand. The patient complained of the sensation at the time, but I desired to keep the electrode in her hand; I wanted to see what it would do. I think it would be advisable to have the patient take the negative electrode in the hand that contains no rings on the fingers, and I have adopted that method ever since.

Dr. Brown, International Dental Journal.

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It should always be borne in mind that the degree of heat indicated by the mercury bath thermometer *never* registers the degree of heat corresponding to that of the inside of the vulcanizing pot where the case is being treated. The figures for this statement are as follows: If the stratum of atmosphere inclosed in the pot above the water line (when the cap is adjusted) is not expelled upon a degree of heat sufficient to generate steam being reached, we can always confidently rely upon our thermometer registering from fifteen degrees to eighteen degrees Fahrenheit, according to the amount of water, below that actually existing within the chamber.

Dr. C. A. Allen, Cosmos.

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There is no such thing as tubuli in dentine. What constitutes the tube is a part of the matrix which has not been filled by calcification; these are canals, and they contain vital fibres.

Dr. R. R. Andrews, Cosmos.

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A boy five years old was brought to my office with the superior left central knocked out. I told the parents that we would have to wait until the permanent teeth made their appearance. About two years after the accident he came in, and the perma-

nent teeth were just coming through, and the one taking the place of the lost tooth was fractured directly in the centre. The fracture extended well up under the gum, and I dismissed the patient, telling him to call occasionally to let me see it, as we would have to wait until the teeth were fully erupted. At about the eighth year he called, and I found the fracture filled with the hypertrophied pulp. The fracture extended so far under the gum and above the alveolus that I decided to extract the tooth, which I did. I filled the apex of the canal with gold, cut off the broken crown, made a gold band to fit the end of the root, put on a new crown, and replanted the root with the crown in position, secured it firmly in position, and, after waiting two weeks, removed the guard. It has been doing good service for three years.

Dr. R. H. Jones, Cosmos.

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Who of us has not recognized the arsenically capped pulp which apparently has given no trouble for years (maybe), but questioning brings forth a history of neuralgia, peculiar to that character of treatment, or some facial disturbance? The pulp-chamber opened; yes, we find a mummified pulp, *suspended in moisture*. Of course it is easy to determine where the moisture came from. There is no *vile* odor of putrescence there, but the peculiar enervating neuralgic disturbance that that character of pulpless tooth creates should be avoided.

Dr. L. C. Le Roy, Cosmos.

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I have what is called the *W. and W.* Woert cataphoresis machine, made by Wade & Bartlett, of New York. I am not wildly enthusiastic over it at the present time. I think it has some merit; I don't think it is a panacea for all the ills that patients have had to suffer in having teeth filled. I have had a very peculiar experience in the use of it. Sometimes the result has been satisfactory, sometimes it has been unsatisfactory. I am not disposed, with my present knowledge, to condemn the machine as much as I am to condemn the operator. I think the ignorance of the operator has more to do with the failures than has the machine.

Dr. Osmun, International Dental Journal.

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Paraffine and resin melted together, in equal parts, make an excellent coating for cement fillings. These two agents just mentioned, while not strictly medicaments, are closely allied to them by reason of their antiseptic qualities.

Dr. W. F. Lewis, Stom. Gazette.

NEGATIVE EVIDENCE.

In the September number of the *Cosmos* appears an editorial which is both scholarly and timely. It is scholarly, because indited by the facile pen of its gifted author. It is timely, because we are at the beginning of the dental year, an epoch marked by the ending of the vacation season. From now until our next summer's holiday we have before us a continuous round of professional duties. What shall we accomplish? That is to say, what besides the mere filling and treatment of teeth? Shall we learn anything? Shall we teach, or become more fitted to teach any thing?

The editorial from which the following is quoted is entitled "Exactness," and the excerpt in part answers the above questions:

"It is too generally the belief that what has been dignified by the name of scientific research is a possibility only to those who are endowed with peculiar mental powers and who have had exceptional opportunities for education. This, broadly speaking, is an error; research is merely inquiry, and it becomes scientific in proportion as it becomes accurate and exact in its method. Scientific research is therefore a possibility for any one who is willing to work in accordance with exact methods, and there is no way by which so much benefit to dentistry can be achieved as by additions to its stock of scientific results. It is true that peculiar fitness for scientific research is possessed by comparatively few, at least but few give evidence of it; but the habit of observation and accurate interpretation may be acquired, so that each in his degree may add something of importance to the common stock of knowledge. If these tendencies were more carefully cultivated by the members of our profession, it would work an improvement all around. The transactions of our professional organizations give pitiful evidence of lack of accuracy of observation among many of those who report their findings before those bodies. As a consequence, much time that is too valuable to be wasted is used up in correcting the errors which arise in consequence of the lack of exactness noted. An equally undesirable result is the amount of space in our journals which even the abstracted reports of such proceedings occupy, and which could be more advantageously devoted to more valuable matter. A common cause of the error alluded to is the tendency to draw definite conclusions from conditions which have no real existence, to read into our observations of phenomena factors which have only an imaginative relation to them and are without foundation in fact."

All this is true, but there is another fact equally worthy of attention. Unfortunately it seems to be overwhelmingly proven by a study of society work, as reported in our current literature, that the great majority of dentists appear to lack a discriminating knowledge of evidence. No fact, scientific or otherwise, can ever be established without proof, and proof must ever rest upon evidence. Consequently, if we are to arrive at scientific data relative to dentistry, we must not only acquire the habit of exact observation, but having observed, we must be able to collate our evidence and logically reach deductions. Above all things we should never overestimate the value of negative evidence. Yet it is a fact, to be noted with regret, that the greater proportion of what is offered as evidence by dental observers, belongs to the negative, rather than to the affirmative variety.

A good example, from the history of our profession, will be instructive. It is not many years since Dr. Younger announced his method of implanting human teeth. Within a year from that time, it was no uncommon experience in society meetings to hear men—men of attainment and reputation—speak of the new operation adversely, supporting their claims by citing failures. Later, we heard men exactly limiting the possible retention of implanted teeth, naming one, two or three years, based upon their individual experience. All of this was illogical, because deducted from negative evidence. Dr. X dogmatically stated that implanted teeth would be “shed” after two years, having himself inserted ten teeth, all of which had been lost by that time. The negative quality of this evidence is found by analysis. Implanted teeth will NOT be tolerated for more than two years, because Dr. X’s ten experiments had NOT lasted longer. This is his deduction, and it is proven to be fallacious by Dr. Y, who rises to report that he has implanted but one tooth, and it is still in the mouth, doing good service, after five years. Dr. Y’s affirmative evidence, based upon a single case, entirely upsets Dr. X’s castle built upon the negative foundation of ten cases, and one affirmative in such a category would outweigh a thousand negatives in the formulation of a scientific truth.

Nevertheless, to continue the history of implantation, and therefrom draw a moral, the reporters of deductions based upon negative experience won the day, and implantation, which enjoyed a temporary favor in the profession, has passed by. All this was wrong. It would have been more scientific to study the affirmative cases, and from them to endeavor to discover the secret of success in this operation which promised, and still promises, so much more than mechanical substitutes. Truly scientific research would have led us to look upon the failures as useful, mainly as opportunities for seeking the causes which had led to failure. Two recorded cases are significant. A tooth had been accidentally displaced by a blow and subsequently replaced by a dentist; fifteen years later the natural crown had been lost, and the root crowned with a gold cap, and twenty years after the first accident the root was still doing service. The second case was a superior cuspid which had erupted within the arch. It was extracted and implanted in its proper position, and after nine years is in perfect condition. These two bits of affirmative evidence, in favor of tooth implantation, render nugatory all that has been said and written against the operation as one of brief value, and seem to indicate that the profession has tabooed a useful operation, through lack of exact inquiry, which might have led to scientific facts of prime importance. In the cases cited it is worthy of note that each tooth came originally from the mouth in which it finally rested. Thus the tooth was certainly suited to the environment in which it was placed. This would suggest the thought that perhaps the final success of implantation is in part dependent upon adaptability to environment, and this would lead inquiry along a path, which, so far as the literature records, has not been followed.

It has been said that dentists are always busy with a fad, and the popular fad of the present day, undoubtedly, is cataphoresis. This new method, or old method under a new guise, seems to promise much, yet even though it has inherent value, there is danger that ultimately it will not be permanently incorporated into general practice. It behooves us at length to take up an investi-

gation with exactness in our method of inquiry and logic in our deductions. Of one danger we should beware. By cataphoresis we are told that we can obtund the sensitiveness of dentine. Let us not experiment with every alleged sensitive tooth which is presented. Let us recognize that sensitiveness sometimes is merely an attribute of fearful expectation and but expresses an attitude of the patient, rather than a true nerve excitation. In such cases the mere suggestion of anæsthesia, whether by cataphoresis or any other convincing agent, will really produce anæsthesia. Such evidence is worse than unreliable, it is valueless. But if we confine our cataphoresis experiments to extreme cases of hyperæsthesia, our collated data may prove invaluable.

OUR MOUNTAIN MEETING.

Our mountain meeting will be a success. There will be a large number of dentists present, and many of them will bring their families. Of this we are assured by the fact that already, before this summer is over, we have received a number of letters from members of the profession commending our course in inaugurating a meeting which will also afford an opportunity for a genuine holiday. Our plans are a little more matured so that we may announce that the proprietors of the Twin Mountain House have promised us a rate by the day, which will be within the reach of every one. In addition to this there will be a special rate by the week, and it is our belief that the majority of those who attend will remain at least one week, and it will not be surprising if the allurements of the locality would tempt many to stop over a week longer.

In reply to the many who have asked for more definite information regarding our offer of prizes on essays, we may say that we are not quite prepared to give the conditions of the competition in full, as we are still in correspondence with those whom we have invited to be the judges of the award. We may say, however, that as the interest in our meeting already seems to be so great,

we have decided upon a more liberal course than was announced in our last issue. We then offered one gold and one silver medal. We now desire to have five papers read at our meeting, and, in addition to the above, a bronze medal will be awarded to each of the authors of the other three papers chosen. Thus all of the papers read at our meeting will have won prizes.

OUR SUBSCRIPTION LIST.

It was the policy of the previous owners of the *ITEMS OF INTEREST* to distribute sample copies of the journal rather freely. We do not intend to follow this example. A very large edition of the September number was sent out, and we will send out a still larger edition of our January number, but a special purpose explains this. The September number being the first published by us, we desired all dentists to know that we had acquired the property. A large edition of the January number will be issued, because we shall wish every dentist to see the *ITEMS* in its new dress. But our policy in the future may be summed up in a few words. If our journal is worth reading it is worth the small price *per annum* which we charge for it, and hereafter no dentist need expect to receive the *ITEMS* every month free of charge.

When we took the journal we had a subscription list which was largely in excess of that of any other dental journal in the world. Believing that we could still further increase our circulation, we sent a postal card to every dentist in this country whose name was not on our list. In this manner we have in one month added 1,032 names to our list of *bona fide* subscribers, a fact which proves that the dentists are quick to appreciate a good offer. Moreover, every mail is bringing us new subscribers (fifty-four in the first mail this morning); therefore, by the time this statement is read the above figures will not represent all which we have accomplished. Thus it is evident that the best writers of this country, if they desire to have their papers widely read, should have them published in the *ITEMS OF INTEREST*.

ITEMS.

Aristol in combination with chloro-percha makes an effective lining to sensitive dentine or for pulp capping. It is non-toxic, non-irritant and possesses properties similar to that of iodine. In ethereal solution it is germicidal. To Dr. Russell H. Cool the credit for this combination is due.

Dr. W. F. Lewis, Stom. Gazette.

* * *

On the enamel walls, the bulwark and defence of the tender and sensitive dentine, the terrible and ceaseless onslaught of the germs is resisted till the end. The faithful enamel particles stand invincible to all attacks till acid, the awful ally to the microorganisms, subtly sinks into its softened surface, and, atom by atom, molecule by molecule, its walls dissolve away. A breach is formed, and myriads of eager microbes flock to make a dwelling-house of this vanquished citadel. Thus encamped they carry on their war with increased rapidity and vigor.

Hence, once more I would draw attention to the necessity of thorough anti-acid therapeusis, not mild, but thorough, with a sufficient basal preponderance of an anti-acid which will be sweeping in its effect.

Arthur Knight, Cosmos.

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COMPLETE SEPARATION OF THE UPPER JAW.

A man, aged forty-nine, was admitted to Swansea Hospital, Wales, on August 7th, 1895. He had been struck on the back of the head by a wooden beam and knocked forward onto a coal truck, the sharp edge of which had caught him at the root of the nose. On examination the whole of the upper jaw was found to be detached from the skull, the nasal processes of the superior maxillary bones, and the zygomatic processes in the malar bones being fractured. There was over an inch of separation in the median line. The frontal sinus and anterior ethmoidal cells were opened up. The eyes were quite uninjured. The parts were cleaned and stitched up, free drainage being provided for by the nose. A Smith's gag was used, which kept the parts in a very good position. The patient wore this continuously for a fortnight. He is now quite well, with the exception of slight ptosis of the right eye.—*Dr. W. R. Meek, Stom. Gazette.*

THE CARE OF THE TEETH.

By F. H. Funston, M. D.

During the last half-century dentrifices have multiplied by thousands, each presenting its own peculiar claim. Some are really valuable; others are harmless; not a few are dangerous. In the latter connection, too great stress cannot be laid upon the fact that any article intended to be utilized for the toilet of the teeth, and which presents an acid or markedly alkaline reaction, is to be regarded with suspicion; it may be added that a number in the market are neither more nor less than dilute solutions of spirit of salt (muriatic acid), which is most rapid in its action upon enamel, and, moreover, promotes decay and tends to produce offensive exhalations. Others are little more than pleasantly flavored soap; but if the latter ingredient is good and pure it cannot be considered objectionable. Tooth powders, too, which sometimes accompany fluid dentrifices, must also be looked upon with suspicion, as they not infrequently contain ingredients that may prove detrimental.

A recent improvement in this line is manufactured by Parke, Davis & Co., Detroit, whose reputation is sufficient guarantee that it, at least, presents none of the objectionable qualities that are too often found in preparations of this kind. This is euthymol tooth paste, which, as its name indicates, depends in large measure for its value upon euthymol, a preparation that has long been employed by surgeons wherever perfect antisepsis was desired, and has, moreover, deservedly gained universal popularity because of its freedom from danger except to germ life.—*Popular Science News*.

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As to making fillings wet I hardly know how to speak strongly enough in its condemnation. It is true any tyro can put amalgam in a wet cavity, and it is also true that the amalgam will hold together and will become hard, and it may stay in the cavity for some time. But such a filling will leak all the same, no matter what amalgam is used, no matter how it is manipulated. The walls of the cavity cannot be perfectly dried by pressing in the filling. Therefore it will be leaky as all sub-marine fillings are, and always have been. It is abominable that men of this day and generation will persist in doing such slop work and call it dentistry.—*Dr. G. V. Black, in Dental Practitioner and Advertiser*.

BURIED WEALTH.

Some French crank, with a taste for statistics that are of no value to any one, has figured it out that the dentists of America annually insert in the teeth of their customers about 1,800 pounds of gold, which represents a cost of \$450,000. This gold is never recovered, of course, but is buried with the person in whose mouth it is placed.

The statistician then goes on to say that allowing for the rapid increase in the population of the United States and the still more rapid deterioration of American teeth within 100 years the cemeteries of this country will contain more gold than is now in circulation in France. I suppose that when this state of affairs is reached mining companies for the working of cemeteries will be a matter of course.—*St. Louis Globe Democrat*.

TO THE EDITOR.

Dear Doctor:—While fully aware that “one swallow does not make a summer,” I should be pleased if you can find space for the following decidedly *personal* experience, which may serve to modify the positive views expressed in your “Question Box” in the current issue:

Nine years ago the writer, then a trifle over thirty, but with an excellent record for health, which still holds good, awoke one night with a genuine and unmistakable toothache. Owing to previous lack of experience, save what hearsay may have served to convey, he could not properly estimate the proportion which the said ache might have borne to other aches usually felt under such conditions; but it was amply sufficient to vividly recall numerous references to the “tortures of the damned,” etc., and the memory thereof “haunts him still.” Fortunately, however, it was not of long duration, and the remainder of the night was spent in comfort. The previous history of the tooth involved, a superior molar, was the very common one of approximal decay treated and retreated, with a succession of amalgam, gold, and, finally, a combination of both, with, possibly, some patching up with gutta-percha. The tooth had been intolerant of cold drinks, etc., for some time.

Next day after the attack the case was placed in the hands of Dr. Davy, of Baltimore, who very promptly announced a de-

cided exposure of the pulp from the *distal* surface, in the second superior molar, and advised an application of arsenic with subsequent removal of pulp and root-filling. Realizing the difficulties so often encountered in that class of root-filling, the writer begged for a *trial*, at least, of capping; but the Doctor was very averse to making the attempt, urging that the fact of its having ached severely, the unfavorable location and an unmistakable exposure of very noticeable proportions, all combined to render the early death of the pulp practically certain; and it was only after urgent requests that he gave an unwilling consent to attempt the capping.

This was accomplished by touching the point of exposure with carbolic acid and oil of cloves mixed, and immediately placing dry oxide of zinc over the moistened surface, after which thin zinc oxyphosphate was carefully worked over, as the position would not readily admit of flowing it over, and as soon as the cement had hardened sufficiently an amalgam filling was inserted.

The first contact of the cement was quite painful, but it soon became comfortable. The entire operation was accomplished in a short time and without any particular precautions. The Doctor confidently predicted an early failure and renewed trouble.

Throughout all the interval, up to within about eight weeks, everything remained comfortable, though Dr. Davy several times expressed the belief that the pulp was dead; but as there was no trouble, no examination was ever made of that tooth beyond an occasional scrutiny of the filling, which always seemed to be doing well; but as some discomfort was felt in that vicinity about the middle of July last, which soon increased sufficiently to render contact of ice-water quite painful, the writer offered himself to Dr. Hollingsworth, at the late meeting of the American Dental Association, at Saratoga, as a subject in the demonstration of cataphoresis. The examination finally located the trouble in the same second molar, happily not on the *distal* surface, however, but in a leaky filling on the *mesial* surface. The removal of this filling disclosed a very ordinary condition of sensitive dentine, which left no doubt in Dr. Hollingsworth's mind as to the vitality of the pulp, and several gentlemen present were equally well assured of that fact, while the writer and patient was most thoroughly impressed with the belief that their opinion was correct.

Very truly yours,

A. W. SWEENEY.

WASHINGTON, D. C., September 15th, 1896.

NOTICES.

The Second District Dental Society will hold a meeting on Monday, October 12th, at 2 o'clock, in Y. M. C. A. Hall, Newburgh, N. Y. Take the day boat up the Hudson. All are invited.

U. J. TURNER, *Secretary*.

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The annual meeting of the New Hampshire Dental Society will be held at Portsmouth, N. H., October 6th, 7th and 8th. An invitation to be present is extended to the profession.

F. F. FISHER, *Secretary*.

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The annual meeting of the Northeastern Dental Association will be held in Springfield, Mass., October 21st, 22d and 23d, 1896. An interesting meeting is promised and a large attendance is desired. Please mark off the dates on your Appointment Books *now*, and make an effort to be present. Programmes will be sent in due time.

EDGAR O. KINSMAN, D.D.S., *Secretary*.

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The Minnesota State Dental Association held its thirteenth annual meeting at Winona, August 19th, 20th and 21st. It was a very pleasant and successful session, considerable prominence being given to the social part. Excursions upon the river, given by the Winona County Dental Society, reception and banquet and carriage rides were among the events, which the dentists and their ladies enjoyed. The officers for the coming year are: President, W. D. James, Tracy; Vice-President, F. S. Robinson, Plainview; Secretary, H. L. Cruttenden, Northfield; Treasurer, H. M. Reid, Minneapolis; Chairman of Executive Committee, O. A. Weiss, Minneapolis; Master of Clinics, T. B. Hartzell. The next meeting will be held at Minnetonka. Yours truly,

H. L. CRUTTENDEN.

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The Northern Iowa Dental Society held its second meeting at Spirit Lake, August 11th, 12th and 13th, 1896. The officers elected for the ensuing year are: J. J. Grout, D.D.S., Rock Rapids, President; Guy Huntley, Mason City, Vice-President; William H. Steele, Forest City, Secretary; A. N. Ferris, D.D.S., Waterloo, Treasurer. Next place of meeting, Mason City, first Tuesday in September, 1897.